The AUTOMOBILE

WEEKLY — NEW YORK—SATURDAY, JANUARY 23, 1904—CHICAGO — 10 CENTS

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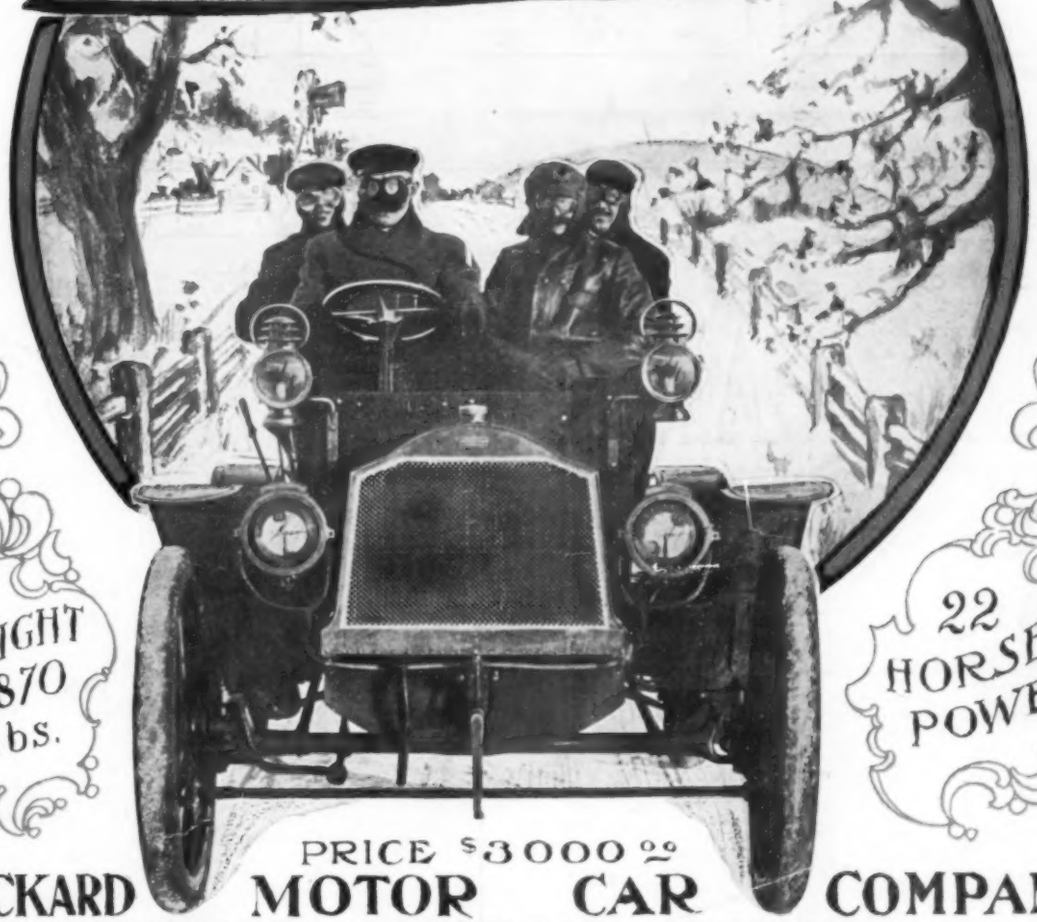
PERIODICAL DIV

Packard



WEIGHT 1870 lbs.

22 HORSE POWER

PRICE $3000.00

PACKARD MOTOR CAR COMPANY

DEPT. 2. DETROIT, MICH., U.S.A.

MEMBER OF THE ASSOCIATION OF LICENSED AUTOMOBILE MANUFACTURERS.

G & J Detachable TIRES

THE TEST OF TIME simply emphasizes their superiority. The harder the tests the more the worth of G & J TIRES is made apparent.

Barney Oldfield and G & J TIRES brought the Automobile Mile Record to 55 4-5 Seconds ON A CIRCULAR TROTTING TRACK AT YONKERS, N. Y., JULY 25, 1903

The terrific strain to which G & J TIRES were subjected in this dare-devil feat can be but faintly imagined. But once more they stood the test, conclusively demonstrating that they cannot be pulled off, ground off or made to show weakness in any way. They are the only ones that can't.

G & J TIRES COMBINE SPEED WITH COMFORT, AND SAFETY WITH BOTH.

New York Selling Agency
81 READE STREET

G&J TIRE CO.

INDIANAPOLIS, IND.
U. S. A.

NEW YORK SHOW, Space 147 *CHICAGO SHOW, Spaces 153 and 154*

This is one of our new series of daily paper advertisements which will surely enormously increase the sale of

KNOX 1904 CARS

HAVE YOU ORDERED YOURS YET?

PRINCIPAL AGENCIES.

New York, Knox Automobile Co., 152 W. 38th St.
Boston, The Reed-Underhill Co., 41 Stanhope St.
San Francisco, National Auto. & Mfrs. Co., 134-146 Golden Gate Ave.
Philadelphia, Knox Automobile Co., 16th and Wood Sts.
Pittsburg, Louis E. Reneman, 315 Frick Bldg.
Minneapolis, Northwestern Motor Vehicle Co., 112 S. Sixth St.
Fall River, Mass., J. Edward Newton.
Providence, R. I., Davis Automobile Co., 79-83 Mathewson St.
Hartford, Conn., S. A. Miner, 304 Allyn St.
Paterson, N. J., The Auto Shop, 450 Broadway.
Marlboro, Mass., Frank Billings.
St. Louis, Mississippi Valley Auto. Co., 3935 Olive St.
Worcester, Mass., Harrington's Auto Station No. 1.
Denver, Colorado Auto. Co., Court Place.
Milwaukee, Wis., Geo. A. Crane, 187 Wisconsin St.
Louisville, Sutcliffe & Co., 1051 Third St.
Brooklyn, N. Y., A. R. Townsend, 1148 Bedford Ave.
New Haven, Conn., C. H. Torrey, 751 Chapel St.
Baltimore, Md., Maryland Automobile Co., 24 E. 21st St.
Columbus, Ohio, Oscar Lear Co., 201 S. High St.
Indianapolis, Ind., Indiana Auto. Co., Monument Place.
Lowell, Mass., W. E. Greene, 91 Appleton St.
Troy, N. Y., James Lucey, 359 Fulton St.
Grand Rapids, Mich., Adams & Hart, 12 W. Bridge St.
Bridgeport, Conn., W. S. Brandegee, 615 State St.
Chicago, Ill., Geo. H. Crane, 521 to 531 Wabash Ave.
Portland, Me., H. J. Willard, 28 E. Promenade.

NEW YORK SHOW SPACES, 61-62-63 Madison Square Garden

KNOX AUTOMOBILE CO., Springfield, Mass.

K ♦ K

WATERLESS GASOLINE CARS

are the diamonds of the automobile world. They are known value and the most valuable known. They are brilliant as diamonds in service and always at par, easy to operate, and wear like diamonds. Examine the Knox patent air-cooling system. The only *high power* engine cooled by air. The ideal winter machine. You can save repairs by using the Knox. They have every tested modern improvement.

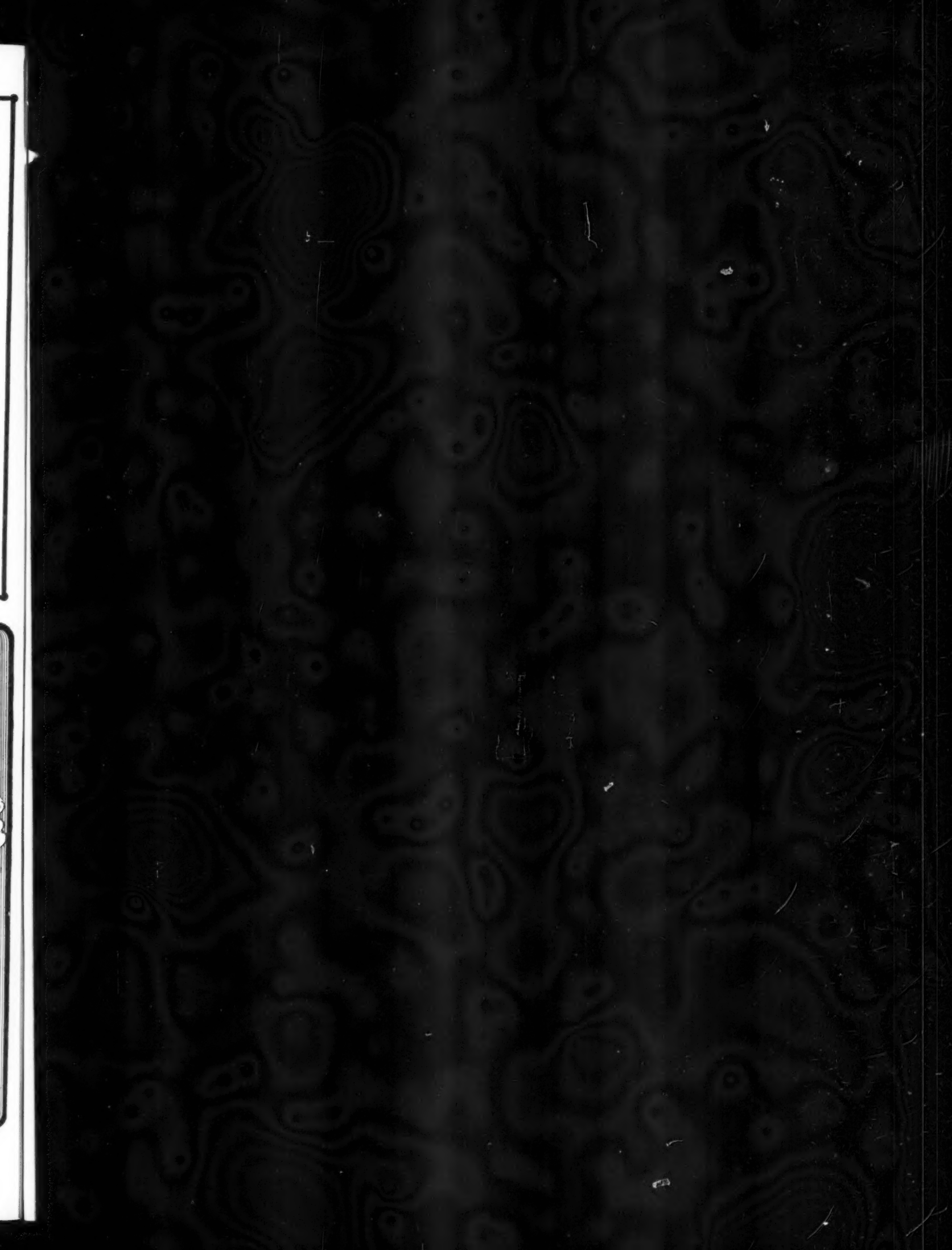
TONNEAUS, SURREYS, and RUNABOUTS

Six Styles Passenger Cars and Six Styles Commercial Cars to Choose From.

Send for catalogue

Knox Automobile Company, Springfield, Mass.

Member Association of Licensed Automobile Manufacturers



THE AUTOMOBILE

WEEKLY

JAN 25 1904
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NEW YORK—SATURDAY, JANUARY 23, 1904—CHICAGO

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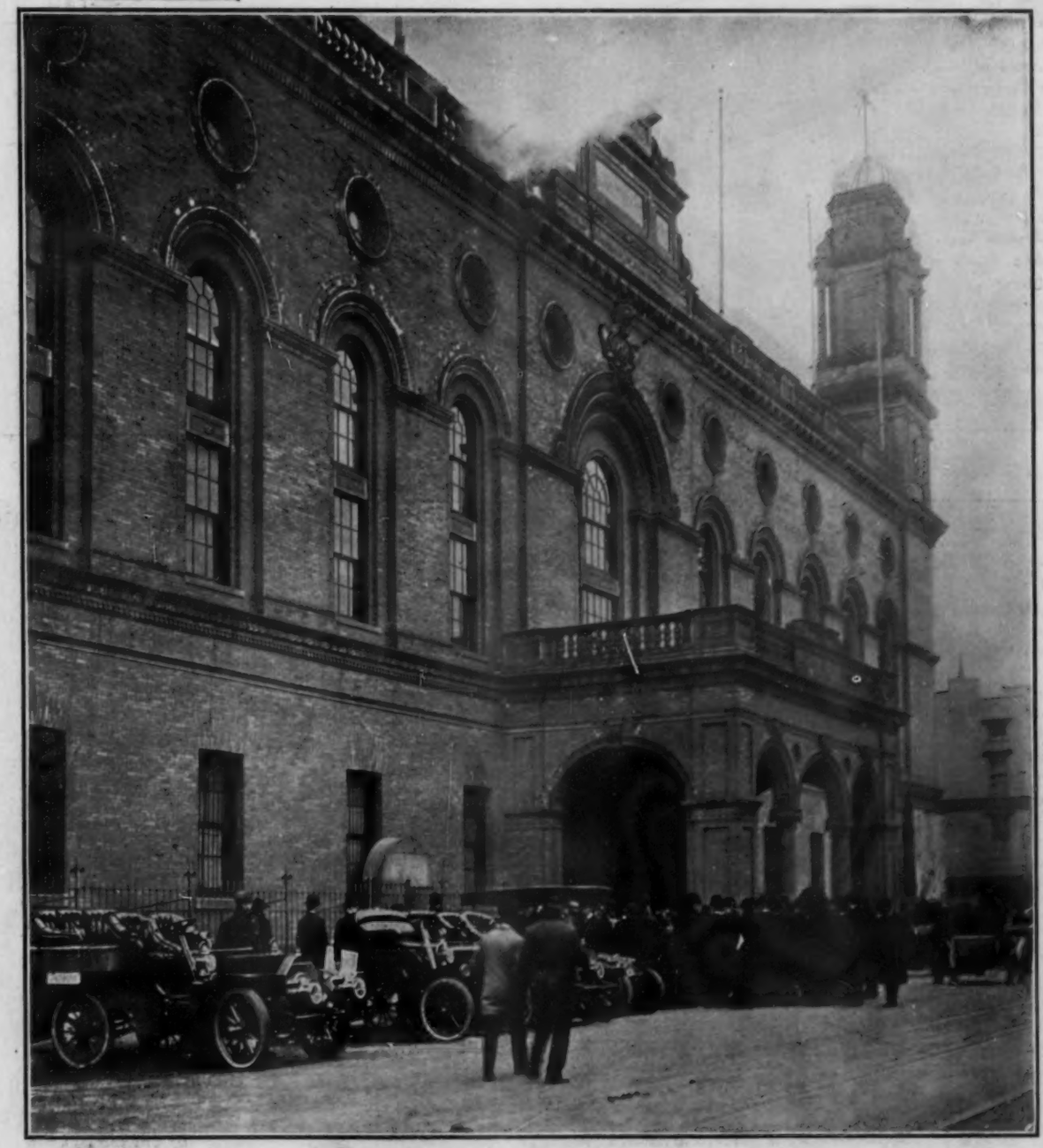
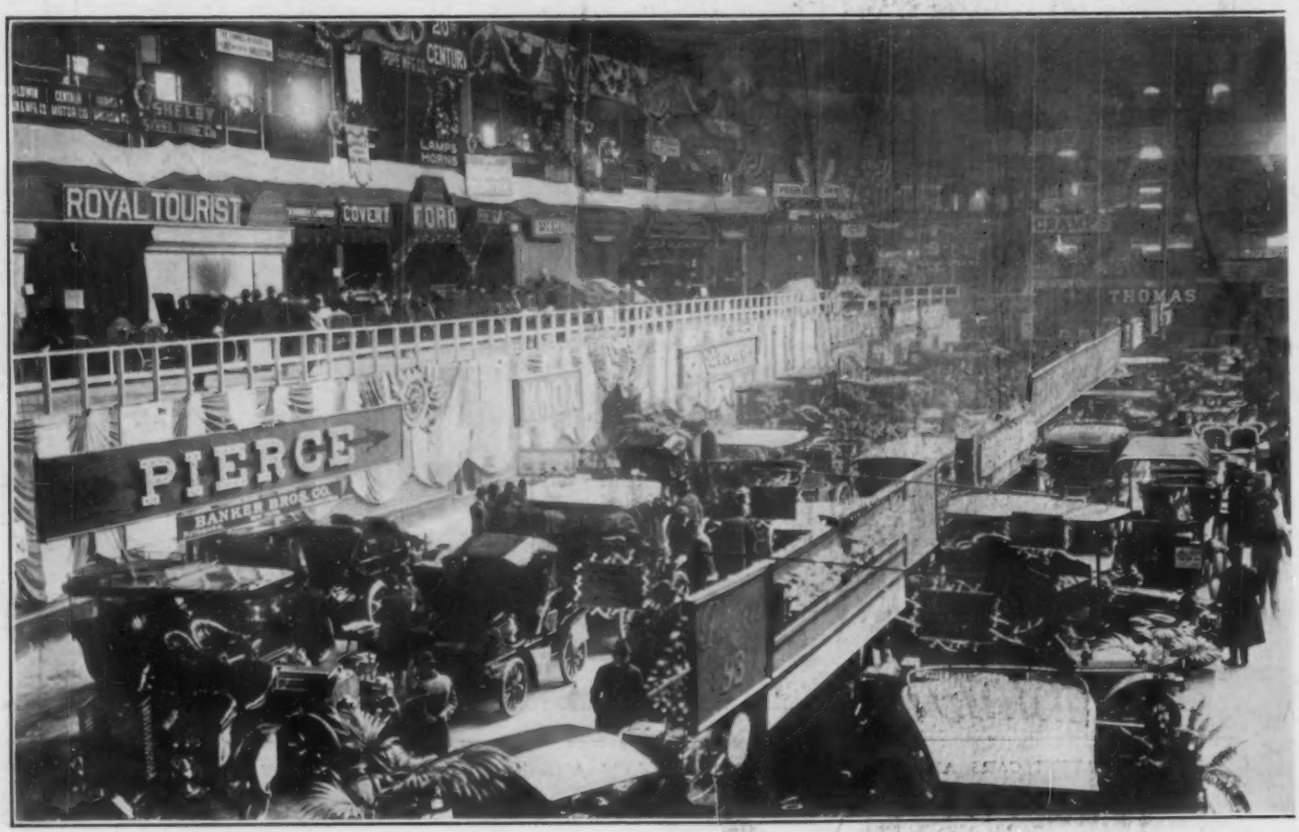


DEMONSTRATION CARS AND INTERESTED SHOW VISITORS ALONG REAR OF MADISON SQUARE GARDEN.

THE NEW YORK SHOW—MAIN HALL—AS IT APPEARED SUN



AN EARLY AFTERNOON CROWD AT

D... AFTER THE OPENING ON SATURDAY NIGHT.

THE SHOW ON THE SECOND DAY.

SATURDAY AFTERNOON: EXHIBITS FOR THE GARDEN AT TWENTY-SEVENTH STREET ENTRANCE.

Opening of the New York Show.

In accordance with the program, the 1904 New York Automobile Show was opened in and at Madison Square Garden last Saturday evening under the triple auspices of the Automobile Club of America, the National Association of Automobile Manufacturers, and the Madison Square Garden Company, the two first mentioned organizations taking all the credit for the immense success and large attendance which was scored at the opening and increased notably in course of the week, and the latter all the blame for the execrable music and the generally untidy and uninviting arrangements which met the gaze of visitors as soon as they strolled away from the exhibitors' stands to take in a general view of the show.

The opening took place with the usual absence of formalities. The doors were thrown open, and the throng poured in. That was all. But to one who had seen the condition of the main floor and galleries early Saturday afternoon it seemed wonderful enough that even this could be done without disgrace. Hopeless chaos had seemed to prevail a few hours earlier, and many stands had been unoccupied, as shown in our illustration on page 89 from a photo taken at 2 P. M., but at 7 o'clock every bit of unfinished work was put aside or covered up—the finishing to be resumed on the Sunday—floors were swept and exhibits uncovered and dusted. The bunting, streamers and signs were, of course, in place a little earlier, and when all the lights were turned on they shone upon an exhibition which, though not artistic as a whole, was decidedly imposing in its magnitude and variety and not lacking in stands which, taken singly, pleased the eye and tempted to closer examination.

The salient features were at once apparent. An abundant number of chassis laying bare motor construction and general design; and canopy top, limousine rockaway, landaulet and other styles of closed or closable carriages, gasoline motor driven, in much greater number and variety than ever previously shown in this country.

Statistics compiled a few days after the opening gave 181 gasoline motor vehicles, 46 electric vehicles, 11 steam vehicles and 12 motor bicycles, but this substantial increase in gasoline and electric vehicles over last year's show, fails to indicate how much larger the present exhibition is. A sweeping glance gave a more accurate increase, revealing the upper balconies and boxes which were empty in previous years, filled with exhibits, as plainly shown in our engravings. And after Monday morning a most important branch of the exhibition was conducted not in the Garden but outside of it on Twenty-seventh Street and Fourth Avenue, consisting in a vast number of demonstration cars in which promising visitors were taken around to become acquainted with the riding qualities and the system of motor and car control of the various vehicles. This feature is pictorially rendered in two of our engravings and has grown in importance to such a degree that many exhibitors are now advocating that the next show be held entirely outdoors, so as to solve the problem of finding space enough to accommodate the industry.

An account of what the show offered at each stand together with several articles dealing with the character of the exhibition are given in the following. Lack of

DEMONSTRATION CARS—DUPLICATES OF SHOW EXHIBITS—LINED UP ON TWENTY-SEVENTH STREET.

time, however, prevented the completion of the description, which is arranged by the location of the exhibits in the Garden, and our readers will find mention of the stands here omitted, in next week's issue. The omission includes all the machines, mostly of foreign manufacture exhibited in the "Restaurant" of the Garden, and a number of accessories and components in the upper tier of boxes and balconies.

The value of each exhibit, in the case of some of the American makers, runs close to $50,000, a considerable portion being in the demonstration cars outside the Garden.

The convertible limousine-tonneau type of covered vehicle promises to be a popular style, a number of prominent American cars being so designed.

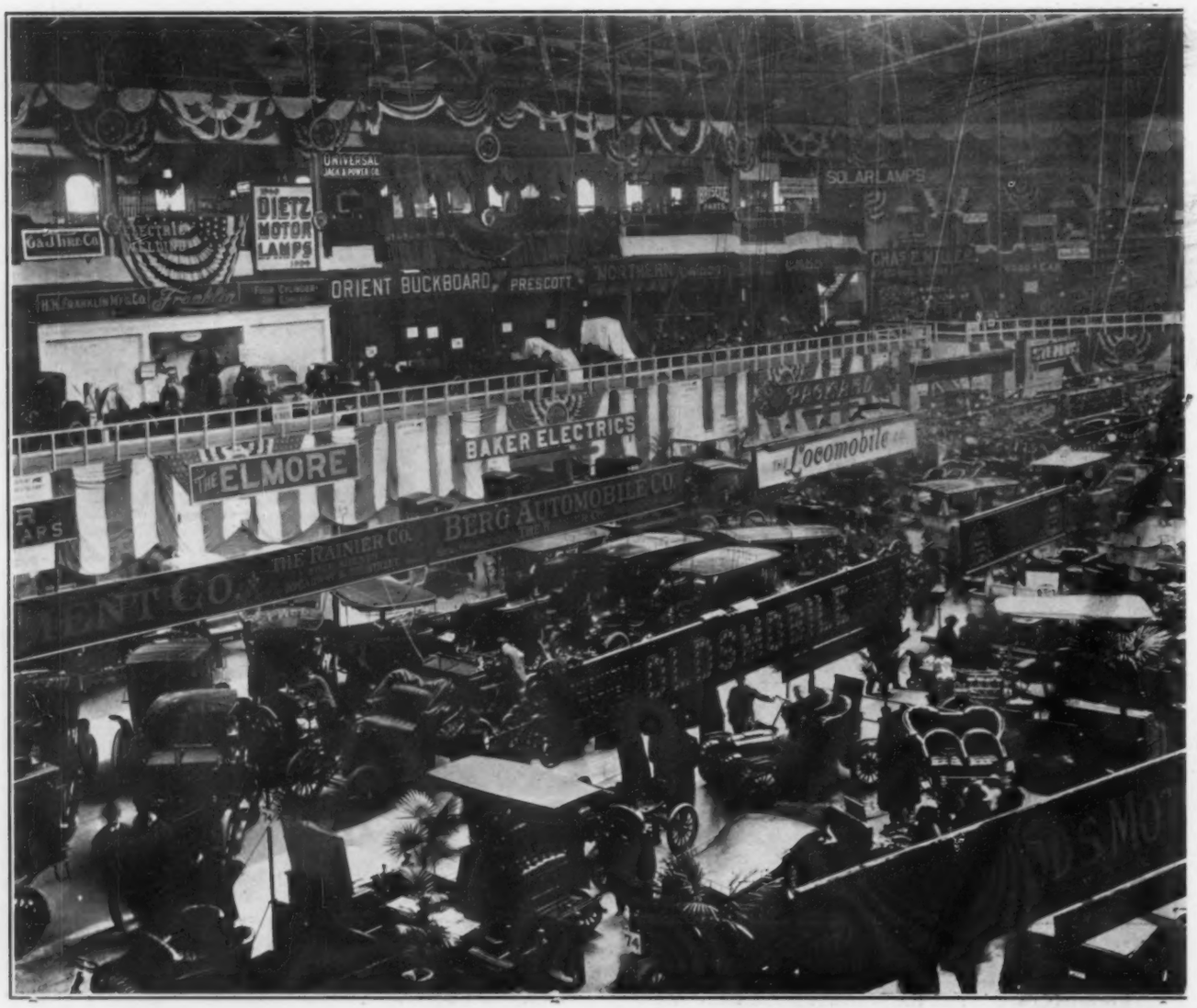
Edwin Richter of Richter Bros. of Kansas City, is in New York, where he will remain until after the show. E. P. Moriarty is another of the Kansas City dealers to attend the exhibition.

The Show an Educational Treat

Up to this 1904 show there has yet lingered a belief among American carmakers that it was an error to fully disclose all particulars relating to the construction and action of their product. "We don't propose to educate the public We are not paid for that. We paid for our education, let others pay for theirs, we are not going to give away what it has cost us so much to learn." This was what some of them said in 1903, and what most of them said in 1902. Now all is changed; the makers have at last discovered that a fully and thoroughly "educated" public is absolutely indispensable to act as purchasers, and this present Garden exhibition sees every manufacturer giving the utmost publicity to every detail of his own work, and in many cases spending large amounts of money in producing special exhibits, sectional and moving, often electric driven, and placing attendants in charge, who are in all cases perfectly competent instructors of the public, and who are constantly busy in answering questions, many of which show that the seeker after knowledge has already much more than a surface acquaintance with the matter in hand.

This is the only wise or rational procedure. Success of the motor wagon must always depend on intelligent driving, and the sooner the public is thoroughly familiar with the details of mechanical propulsion, the sooner the automobile will come into general use. What is shown outside of commercial product, at the Garden, 1904, is here told in brief detail:

The Knox shows a chassis, wheels raised clear, electrically driven, over a full sized horizontal mirror, set in the



VIEW OF MAIN EXHIBITION HALL, ARENA PLATFORM AND

floor, making a most attractive exhibit, constantly surrounded by as many as can see the movement.

The Toledo Pope Company shows two superb details, hand actuated, one a sectional model of a two-cylinder vertical motor, permitting the pistons and valves to be seen in motion, and one of the sliding-gear speed-change with openings in the casing top, so that the speed-changing movements of the gears are visible.

The Haynes-Apperson stand has a pair of opposed cylinders, sliding gear, speed change, chain transmission to balance gear on divided rear axle, crank-box cover removed, attended by a thoroughly competent demonstrator, who is constantly occupied.

Charles E. Duryea, veteran of the ranks, shows a sectional model of his three-cylinder inclined motor, hand-driven, crankcase opened.

The Packard has a four cylinder vertical chassis, rear wheels raised clear, electrically driven, showing all the action in the well selected, and gives the intelligent observer a clear idea of the advanced design and construction methods employed

The Oldsmobile shows a superb electrically driven sectional model of the runabout, the body panels being of glass. The simplicity of the Oldsmobile makes this exhibit one of the most efficient public instructors possible. It is the primer of the motor wagon, and is surrounded by a crowd of learners every minute of the day and evening.

The "Cadillac" shows a complete regular

BALCONIES, LOOKING TOWARD THE ENTRANCE—TUESDAY NOON.

chassis, complete, standing over a horizontal mirror on the floor, so as to show the whole underside, and one of their planetary friction-clutched speed-changes mounted on a stand, and a sectional exhibit of an artillery wheel hub and spokes, exhibiting the construction, all of which are constantly studied by throngs of observers.

The Stearns Company, Cleveland, shows a beautifully finished chassis, horizontal most interesting manner, which is also constantly surrounded by a crowd giving serious attention to the movements displayed.

The Berg shows the large and small chassis, with important parts, gears, piston, cam-shafts and so on, displayed singly, and fully qualified experts are at hand to answer the questions which continue to be asked from the opening to the closing of the Garden doors. The Berg display is chassis, with a demonstrator in attendance who can convey information to others effectively and in an agreeable manner, and has a crowd about it all the time.

The E. R. Thomas Company display a complete three-cylinder, motor-driven chassis, sliding change-gear cover removed, and a hand actuated open model of the sliding change gear on a separate stand, and have good attendants, who are kept more than busy telling things a thousand

times over and over again to eager listeners.

The Matheson shows a 4-cylinder tonneau as much exposed as possible, and a stand of finely designed and finely finished details, including the Matheson crankshaft, friction clutch and some shafts, screw-threaded and carrying integral pinions, and a marine connecting rod for a 2 1-4 inch crank-wrist. The workmanship is excellent, and the display is profitable.

The Peerless has a complete 4-cylinder chassis, everything polished, boxes all open, which is an altogether admirable example of workmanship, and receives the attention which it so abundantly deserves. This Peerless chassis is one witness to the fact that Americans can build as fine automobiles as any other country can show.

The Autocar shows a regular chassis, as much exposed as possible, not, however, cut away anywhere. Such an exhibit gives the observer a correct idea of the actual commercial article, and is a most efficient aid to the salesman. On a separate stand the Autocar exhibits a complete rear axle, without the wheels.

The Winton has a Winton motor on an independent stand, and a complete chassis over a mirror on the floor, fully disclosing the Winton peculiarities of construction, which are centers of attraction, and has a display of change gear and water circulating parts on a table.

The Locomobile shows the touring car chassis, and has exhibits of parts on separate stands, and admirable as is the workmanship displayed, it is less praiseworthy than the infinite patience of the demonstrator who answers the endless questions of students

The "Royal Tourist," Cleveland, shows a regular chassis, four-cylinder, sliding gear speed change, bevel gear to rear axle, and a smaller chassis, two cylinders, sliding gear change and bevel gear to axle, regular construction

The "Orient." has a detached model, full size, of the new speed change, added to the Orient Buckboard this year, which is very finely finished, and a beautiful design.

The Franklin exhibits the chassis of their large machine four cylinders air-cooled, set lengthwise of the wagon, and of the small chassis, four cylinders set crosswise, both regular constructions.

The Stevens-Duryea, in addition to their regular wagons, exhibit their racer, a plain chassis, no body, four cylinders, horizontal, two opposed pairs of the regular Stevens-Duryea motors.

The Walter car has a well-finished, four-cylinder chassis on view, which receives the usual amount of attention.

In the foreign exhibit, a Panhard 1904 chassis is the first thing in evidence, with a Clement four-cylinder chassis finely finished, at its left, across the aisle. A beautifully finished four cylinder Darracq chassis stands over a mirror at the inside corner of the railing, with the Panhard and Levassor four-cylinder chassis diagonally opposite, both finely finished and vastly impressive. A second Darracq chassis, of equally fine appearance, stands next inside the middle railing. Then comes a Decauville, on the right next the wall, all the bright parts highly polished, four-cylinders and bevel gear to divided rear axle, extremely pleasing to the eye of the trained observer.

The Moyea delivery wagon chassis, disk and traversing pinion speed-change, the disks as large as will go in the chassis crosswise, is on the right, next to the wall, and bears a card, asserting that its operation cost for 4,500 miles of actual service made during seven months, was $0.037 per mile, with $4.30 of this for repairs; in the same space stands the Moyea touring car chassis.

The Howard shows a four-cylinder launch engine and detached posts on a stand, all elegantly finished, as a matter of course.

Next, in basement, follows the marine motor exhibit of Newberry and Dunham, representing the Globe Iron Works Company, Minneapolis, and the Western Gas Engine Works of Mishawaka, Ind.

Rodgers shows an air-cooled opposed cylinder motor, the larger Rodgers air-cooled type, on an independent stand, and motor parts, detached, near by.

The Brennan Motor Company have an interesting exhibit of their "standard" two opposed cylinder type motor for land and marine use, on independent stands, 8, 12, 14, and 20 horsepower motors being shown, together with a stand of parts.

The Bramwell, Springfield, Ohio, shows a regular single cylinder driven running gear, body removed and standing on horses alongside; sometimes replaced, this wagonbody being designed with special view to instant removal.

The Sandusky Auto Company shows a wagon, and a separate single-cylinder chassis, regular, finely finished, 4 5-8 x 5 3-4 inch motor.

The "Relay," Reading, Pa., shows front and rear axles detached, and a separate sliding-gear change-box, with one of their three-cylinder driven tonneau body cars, 1,800 pounds weight, price $2,000.

The Timken Roller Bearing Axle Company, Canton, Ohio, show wheels mounted on their bearings, on independent stands. About eighty of the cars shown in the Garden, use the Timken bearings and some use no others The Timken factory, about 350 hands, has been running steadily, double turn, since February 1, 1903, to the present hour.

Wanamaker's Ford exhibit shows a Ford two-cylinder opposed motor on a stand, and the "999" on which Ford made his world's record mile, very lately.

Alexander Fischer exhibits a Rochet-Schneider chassis, regular four-cylinder model.

The Jones-Corbin Company, Philadelphia, have their own two vertical cylinder sliding-gear transmission, side chain chassis, on view, 16-horsepower, now first exhibited.

The basement, hitherto shunned by Garden spectators, is as crowded as are all other parts of the present exhibition.

Some Departures from Conventional Design Noticed At the Show.

Compression relief cocks on four-cylinder cars connected up to be actuated by movement of single lever.

Both jump spark and make-and-break ignition fitted to muli-cylinder engines.

Canvas curtain with celluloid panel between front seat and tonneau of canopy-top car.

Ratchet sprag inside of rear wheel brake drum

Air-cooled engines in increasing number and power.

Oil tank bolted to crankcase of horizontal two-cylinder engines with automatic feed.

Friction disk drive on auto-truck.

Transmission by oil, aiming for simple power steering and four-wheel drive without gears or chains.

Combination of cross frame engine support and complete protection for power and transmission accomplished by sheet-steel stamping, riveted to side frame members.

Marine type four-cylinder explosion engine with crankcase omitted.

Side entrance tonneau car with medium length wheelbase.

Ventilated front to canopy top for touring cars.

Forward thrust control pedals on more cars than formerly.

A four-cylinder, horizontal compound single-acting steam engine in front, driving by propeller shaft to rear wheels.

Chain case with oil bath on runabout.

High and low pressure, compound, three-cylinder gasoline engine.

Light power cars with horizontal engines under the seat built on French outlines.

Mechanically actuated inlet valves located in cylinder tops

A number of three-cylinder engines.

Several cars in which "direct drive on high speed" is actually accomplished without rotation of the secondary shaft.

Motor front electric surrey with bevel gear drive through propeller shaft.

Sliding gear transmission mounted on live rear axle.

Four-cylinder, air-cooled motors, longitudinally disposed in front, developing 40-horsepower

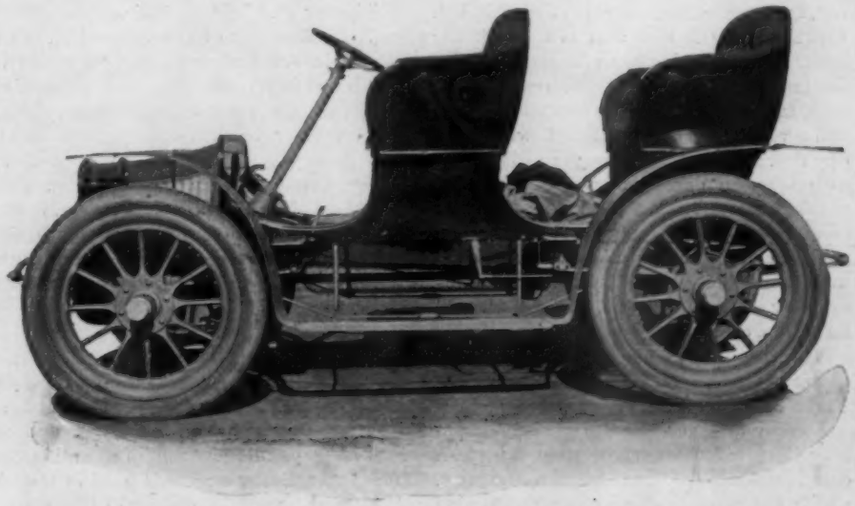
EXHIBITS ON THE MAIN FLOOR

Winton Motor Carriage Company.—This is the first stand on the right as the visitor enters the main hall. Position of honor is given to the Bullet No. 2, around which is always gathered an eager group of spectators who recall to the memory of one another the different speed performances of this low, eight-cylinder racer. Besides the Bullet, two standard 24-hp. Winton touring cars of 1904 model are shown, one finished in canary yellow trimmed with black and without canopy, and the other finished in maroon trimmed with black and fitted with the canopy top that is regularly furnished this year with all Wintons at no extra charge. The glass front of this top is hung on forwardly extending brackets near the top of the front uprights by means of other brackets of segment form screwed to the top of the front glass frame. This arrangement causes the glass to clear the steering wheel readily when it is raised. The top of the front is provided with ventilating slats that aid in dissipating the dust when the front is down, creating an air current back of the glass.

In addition to the complete cars, the exhibit consists of a complete chassis, rough finished and having the machinery aluminum painted, a complete motor mounted on a stand and operated by a small electric motor, and various parts of the engine displayed on a table. Among these parts is the aluminum bottom plate of the crankcasing with centrifugal circulating pump attached, and a new lubricating oil pump, built into the plate, and having its plunger worked by the striking of one of the connecting rod ends against a roller in the top of the plunger. The oil reservoir is screwed onto the lower side of the base plate and encloses the oil pump. By means of this pump a constant circulation of oil from the bottom to the top of the engine is kept up.

The engine crankshaft has been increased in diameter one-eighth inch throughout its whole length. A new make-and-brake commutator protected by aluminum cover is also shown, together with change speed gear clutch and other parts. The complete chassis stands over a large mirror laid on the floor to expose to view the under part of the machinery.

Olds Motor Works.—The Olds display is one of the most interesting in the Garden, the new tonneau and runabout cars possessing radical changes in outline and material improvements in power equipment. One of the popular Olds runabouts is shown and a chassis with cylinder, crankcasing and valve mechanism cut out to show the working of the various parts, the engine being actuated by a small electric motor belted to the flywheel.



BAKER MOTOR FRONT ELECTRIC SURREY WITH SHAFT DRIVE.

An Olds inspection car for use on steam railroads is exhibited. The little car is made for 3 foot gauge and is fitted with canopy top, dos-a-dos seats. The car shown will be shipped to Yucatan directly after the close of the show. In a delivery wagon with regular Olds power equipment the engine is inspected by means of removable panels in the floor.

The new models possess many novel features for an Olds product, such as long wheel-base, wheel steering with tilting steering column, cellular water cooler, French type outlines, and has, as well, a number of commendable new structural improvements. The engine of the tonneau car is controlled by small levers conveniently located on the steering wheel and operating the throttle and spark advance. The 5 1-2 by 6-inch engine is located with the head to the front and is brought well forward, admitting of ready inspection by the removal of the hinged floor just back of the dash. The valves are mechanically actuated and may be removed by unscrewing two hexagon nuts on the upper side of the cylinder head.

The cylinder and head of the new motor are cast integral, avoiding packed joints.

Sight feed oilers and spark coil are located on the dash. The water and gasoline tanks are located under a hood in front. The well-known Olds spring-suspension is retained, the leaves being lengthened and made heavier to carry the added weight.

Head on, the tonneau car looks "Frenchy" enough to suit any one desiring an automobile without the horseless carriage appearance.

Baker Motor Vehicle Company.—The foremost feature of this year's exhibit of Baker electrics is the company's new electric four-passenger surrey. In addition to this, there are shown models of the full line of Baker cars with center chain drive from the motor suspended under the middle of the body. These comprise piano-box runabouts, with and without buggy tops; stanhopes, and an umbrella folding top stanhope fitted with wire suspension wheels having aluminum wire spokes and hubs, and with willow seat. All have tubular running gears and are finished in black.

The surrey has a small bonnet in front after the manner of gasoline cars, and under it is placed a small electric motor set transversely. The armature shaft is coupled to a jointed shaft that extends all the way under the car to the differential on the rear axle. A globular casing with a long tubular forward extension encloses the driving gears and provides a journal for the rear section of the shaft. The wheelbase is extremely long and the artillery wheels of unusually large diameter. The batteries are carried under the seats. Steering is by wheel or side lever.

Pope Motor Car Company.—The products of the Indianapolis, Toledo, Hartford, and Hagerstown plants of this company are displayed. Important newcomers in the field are the Pope-Hartford Models A and B, the new products of the company's Hartford factory, and the Pope-Tribune runabout or light car made in the Hagerstown factory. This is one of the largest and most popular exhibits in the show, particular attention being attracted by the two big 24-hp. Pope-Toledo touring cars. These are of the European type—vertical four-cylinder motor in front, King of the Belgians body, pressed steel frame and sliding gears, four-speed transmission. One is finished in royal blue with light-yellow running gear and canopy top with

front glass, and the other is finished all in red, trimmed with black and minus the top. Features of these cars are the copper jackets of the engine, the single hinge bonnet that opens along the middle top, exposing the entire motor from either side, the special radiator, the dash that is bent backward on sides and top to conceal and protect the lubricator, switch and battery box.

The Pope-Tribune, which makes its debut this week, is a very attractive little 6-hp., two-passenger car of French type. It has a vertical 4x4-inch motor in front, the cylinder of which has fins for air cooling and the head and valves of which are water-cooled. The bonnet is hinged to the dash and when raised exposes the entire motor, with its Loomis carbureter, the oiler, and other attachments. Transmission is by jointed shaft to a little two-speed sliding gear change-speed enclosed in an aluminum box just in front of the differential on the rear axle. Steering is by hand wheel, and the gears are shifted by a handle just below the wheel. Brakes are foot operated. The flywheel clutch is enclosed in the aluminum crankcase of the motor. The frame of the car is of wood and is carried on four elliptical springs. The wheels are of artillery type. A short platform over the rear axle back of the seat provides ample room for a large hamper. At the list price of $650, this car holds promise of becoming one of the popular machines of the year.

The Model B Pope-Hartford car is the same as the model A, except that it is fitted with a two-seated tonneau. These cars, which are finished in automobile red, upholstered and trimmed with black, have a single cylinder horizontal engine under the middle of the body, with large space for the storage of clothing and tools and extra parts under a front bonnet. In the front of the bonnet is a brass wire gauze, immediately back of which is the water tank. The engine is a slow speed motor, 5 1-4 inch bore by 6-inch stroke and yielding 10 hp. at 900 revolutions. Planetary gearing affords two forward speeds and reverse, operated by side levers and pedal. Drive is by center chain. A feature of these cars is a movable steering column pivoted at the foot board and having a ratchet lock, so that the steering wheel can be set at any of half-a-dozen angles. All parts of the cars are made on the interchangeable plan so that repairs and replacements can be made easily. The list prices are $1,050 and $1,200 with tonneau.

The Pope-Waverley electrics on exhibition are a piano box, buggy-top physician's road car, equipped with Edison battery, and a stanhope finished in black, both equipped with single 3-hp. motors and having the battery in the rear of the body; a station wagon with divided 40-cell battery and double motor equipment, finished in dark-blue, and a Brewster green delivery wagon with 40-cell underslung battery and double motor equipment. Herringbone gears used in these vehicles contribute to quietness in operation.

Packard Motor Car Company.—A place of honor is given to the "Gray Wolf" racing machine which holds the American straight away record of 46 2-5 seconds for the mile, made December 31, on the Daytona beach. The car is fenced off from the rest of the booth with a brass chain, and standing on the floor in front of it is a photographic enlargement showing its designer and driver, Charles Schmidt, seated in the car on the Florida beach. Another prominent feature of the exhibit is the finely machined chassis of the new 24-horsepower Packard Voiture Legere, mounted on pedestals and connected up to a small electric motor on the floor, from which the engine and driving mechanism are driven at slow speed for demonstration purposes.

A canopy-top surrey of the 24-horsepower type in natural walnut wood finish, trimmed with mahogany, mounted on a yellow running gear and upholstered in red, forms an attractive part of the display. Entrance to the rear seat is through the left front seat, which has a hinged back and folding bottom. Two of the regular tonneau models, with blue bodies mounted on white running gears, one fitted with canopy top, and one of the 1903 model detachable tonneau cars are also shown. The notable advance made by the Packard company is in the change from the use of a single-cylinder horizontal motor under the middle of the car to the vertical four-cylinder motor front type. The handsome limousine car that was the surprise sprung by this company at last winter's shows, was the first public indication of this move.

Locomobile Company of America.—Probably the handsomest showing in American cars is made by this Bridgeport company, which led numerically in the production of steam vehicles five years ago, but now shows only one steamer among four fine complete gasoline touring cars, and one complete chassis. The most magnificent car in the exhibit is a 22-hp. limousine, finished in chocolate brown, with all exposed metal parts and trimmings silver plated and polished—a novelty even in especially finished show cars. The levers, radiator frame, lamps, horn and permanent metal trimmings of the big aluminum body are all finished in polished silver. This limousine opens from the rear and accommodates four passengers comfortably, being more roomy than the company's last year's limousine car. A novelty in the body is the using of wire-embedded glass in the front, which, if accidentally broken, is not shattered as the glass continues to cling to the wire.

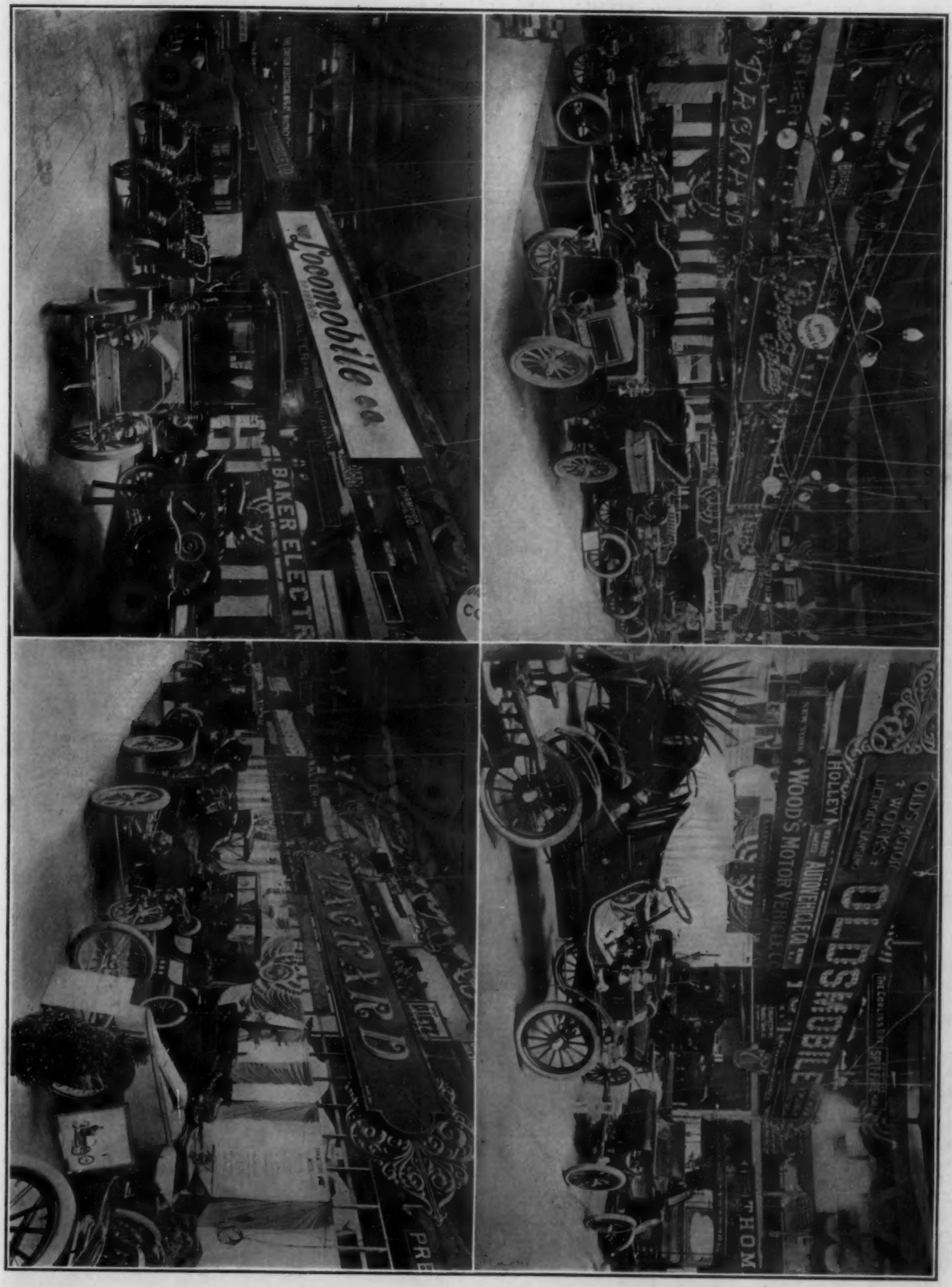
Another magnificent vehicle is a 22-hp. car with King of the Belgians body finished in gray, upholstered and striped in red and fitted with curtained canopy top and wicker side hampers. It is a most luxurious vehicle. Two open tonneau cars, one a two-cylinder 12–14-hp., finished in Brewster green, and the other a 22-hp. four-cylinder vehicle finished in dark blue with lemon colored running gear, are also shown. The chassis on display is for the four-cylinder car and attracts much attention, the convenient valve arrangement, the flexible chain connection to the spark plugs, the combination dynamo and battery ignition, and the governor control mechanism being all special features that are noted with interest.

The Locomobile steam surrey on exhibition is one of about a dozen steam vehicles in this year's show, and is a heavy road car fitted with artillery wood wheels and wheel steering. Its vertical twin cylinder engine is under the rear seat and is entirely encased in a brass cylinder jacket and an aluminum crankcase It is finished in black, gold striped.

In order to show its large line of cars, the Locomobile company is changing its exhibit daily.

Thomas B. Jeffery & Co.—The single-cylinder Rambler of 1903, Model E, is not shown in the Jeffery exhibit, but will be continued as a regular machine of the line. The cars on view are a single-cylinder 8-horsepower car with detachable tonneau; two two-cylinder cars with tonneau, one being fitted with a canopy top, glass front, side baskets, curtains, lamps, horns, etc. A light delivery wagon for quick service is shown. This is an interchangeable outfit, the top being removable and a single seated or tonneau body fitted on the chassis. Among the changes in structural features is the reversal of the engine position in models G and H, and the use of honeycomb radiators, placed in front; the use of wheel steering, and an internal expanding instead of a band brake. The two-cylinder engine is used in models J, K, and L, and is made up of two standard engines, opposed and coupled to the same crankshaft. The starting crank is removable and direct on the main shaft. All tanks are carried under a handsome brass-mounted bonnet.

Woods Motor Vehicle Company.—One of the most comprehensive exhibits is the fine line of electric carriages made by the Woods company. Six handsome city carriages comprise the line shown; two extension broughams, one operated from an elevated rumble-seat; a landaulet; a cabriolet; a stanhope and a victoria. All carriages are fitted with the Exide battery, with a capacity of fifty miles on the level. The drive is by the well-known Woods system, with a motor geared to each rear wheel. Larger tires are fitted than in past practice, full 3-inch solids being furnished on all vehicles shown. The finish is equal to the finest carriage work obtainable, and the designs of all the cars are pleasing and stylish.


Locomobile Co
BAKER ELECTR
PACKARD
HOLLEY
WOOD'S MOTOR VEHICLE
OLDS MOTOR
OLDSMOBILE
THOM

Apperson Bros.—The three Apperson Bros. cars are all handsome specimens of the manufacturers' skill as designers and builders. Perhaps the most notable is the 40-hp. double-tonneau car. The power plant is a 4-cylinder upright 5x6 inches, with mechanical inlet and exhaust, both driven from a single gear-driven camshaft on the left side of the engine.

APPERSON BROS. 25-H.P. FOUR-CYLINDER TOURING CAR.

The cylinders are cast singly, the heads integral with the cylinders. The radiator is a built-up nest of small vertical tubes, with copper gills, provided with water box of large capacity top and bottom. Air circulation is induced by a cast aluminum fan, belt-driven from the engine shaft.

A wood armored frame is used and long semi-eliptical springs. Wheels are 36x4 inches shod with Goodrich clincher tires. The change speed is the clash gear type with chain drive to rear wheels.

A smaller car of 25 hp. with 4-cylinder vertical motor is a reproduction of the 40-hp., with wheels 32 inches in diameter and the details reduced throughout. The third car is the well-known two-cylinder, horizontal engine in front.

F. B. Stearns Company.—A fine example of the American opposed motor type chassis occupies the center of this space. It is one of the new 24-horsepower tonneau car chassis especially finished for exhibition. The armored wood frame is painted black, while all the metal parts, including axles and springs, are highly polished. Left hand control is adhered to, the changes being mainly in the use of longer and better semi-elliptic springs shackled outside of the frame and as close as possible to the drive wheels at the rear; a new carbureter similar to the one used in the memorable October endurance run, in which the big Stearns car made remarkable speed despite the most adverse conditions; a new system of lubrication by which the oil is forced by water pressure from the circulating pump up to the sight-feed oiler on the dash, which is provided with checkvalves, so that the suction of the engine cylinders aids the force of gravity in getting the oil to the pistons, and a throttle button by which the speed may be regulated by the foot as well as by the small quadrant lever on the steering post.

Besides the chassis, two complete tonneau cars finished in very dark green, with red running gears are shown. One has a brown canopy top that is provided, in addition to the usual front glass, with a sheet of transparent, flexible celluloid in a removable canvas curtain reaching from the middle of the top to the backs of the front seats, thus affording the occupants of the rear seats the same protection from wind as those immediately back of the glass.

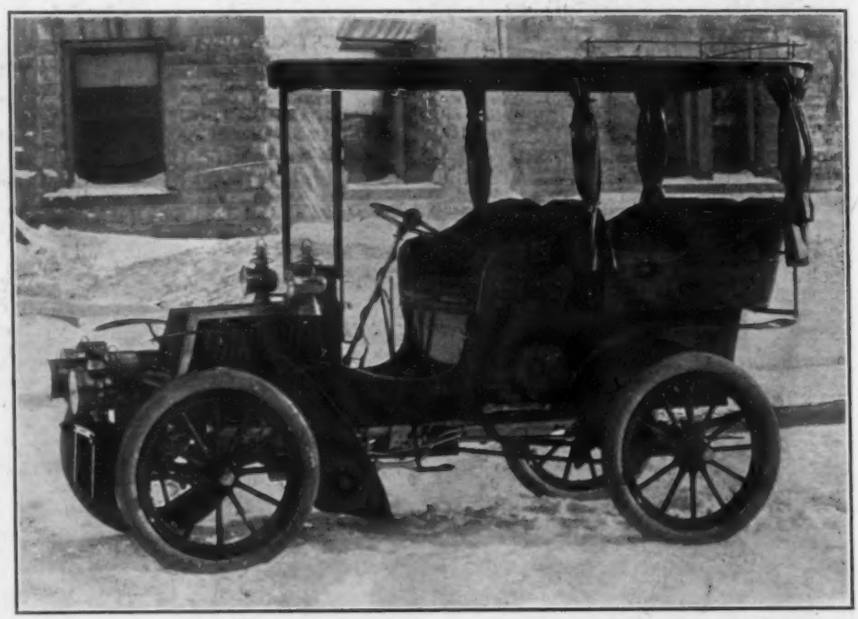
White Sewing Machine Company.—Six steam cars, all with the White standard power equipment; two being fitted with canopy tops and one with a luxurious closed body, removable to transform the car to a regular tonneau.

The well-known mechanical features of the White remain unchanged, but a number of refinements are noticeable. The engine efficiency has been increased, and the car has been strengthened throughout without addition of weight.

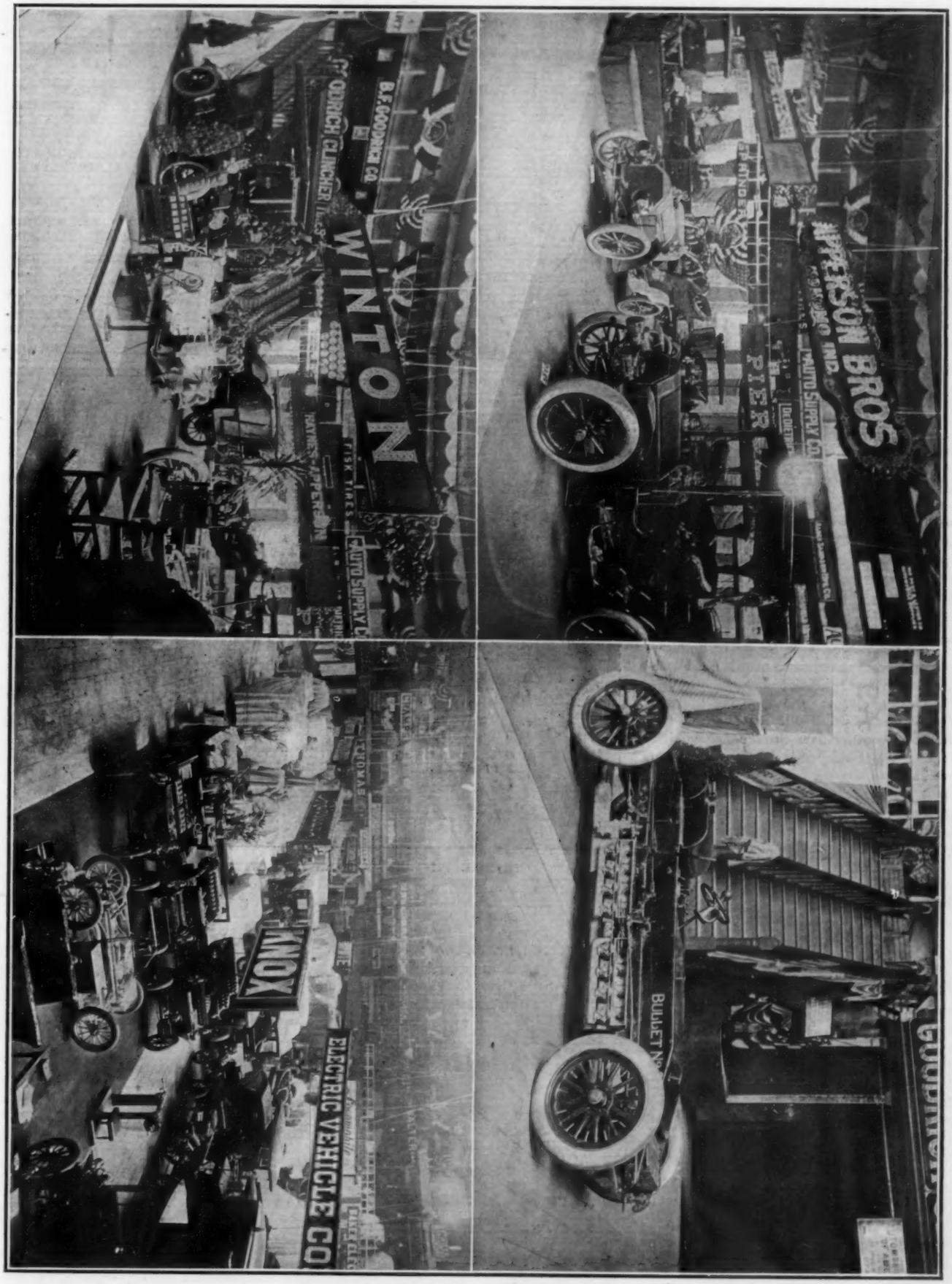
An interesting feature of the exhibit is the White Endurance Run car which, it will be remembered, reached Pittsburg first, Webb Jay driving.

National Motor Vehicle Company.—This company heretofore produced only electric vehicles, but for several years it has been experimenting with the construction of gasoline cars and at this year's show decided to spring a new gasoline tonneau as a radical departure. Its exhibition car was unfortunately delayed on the road from the Indianapolis factory and could not be displayed during the first half of the week.

In electric vehicles a prominent place is given to the hooded front road car with divided battery equipment. Other models are a piano box runabout, a buggy top carriage and a stanhope or physician's carriage having a small incandescent light bulb fixed in the center of the folding top. For demonstration purposes a rear axle with motor and differential attached is mounted on a stand and connected up to a tray of battery cells and a controller, the operating parts being open to inspection. Edison batteries, with which the Nationals are equipped at the option of the purchaser, are also shown. A notable feature is the Schebler carbureter, a newcomer in this now prolific field for improvements in motor control, of which extended mention will be found elsewhere in this or next week's issue.



APPERSON BROS. OPPOSED CYLINDER HORIZONTAL MOTOR CAR WITH TOP.


WINTON
B.F. GOODRICH CO.
GOODRICH CLINCHER
AUTO SUPPLY CO.
APPERSON BROS
AUTO SUPPLY CO.
PIER
KNOX
ELECTRIC VEHICLE CO

Haynes-Apperson Company.—The spaces occupied by this concern are directly at the left, entering the Garden. A handsome King of the Belgians tonneau car built on the new 20-horsepower chassis, is provided with a French type canopy top, Mercedes bonnet, Whitlock radiator and all fittings are brass mounted. The general appearance of the car is particularly pleasing. The engine is the two-cylinder horizontal opposed, long identified with this firm, 5 1-4 x 6 1-2 inches, set longitudinally under a long bonnet, easily removable for inspection. A Morse silent chain carries the power to the transmission case, which is the well-known Haynes-Apperson gear with 1904 refinements. Power is carried to the drive wheels by a roller chain to the spur-differential on the through rear axle, and the tubular member of the same.

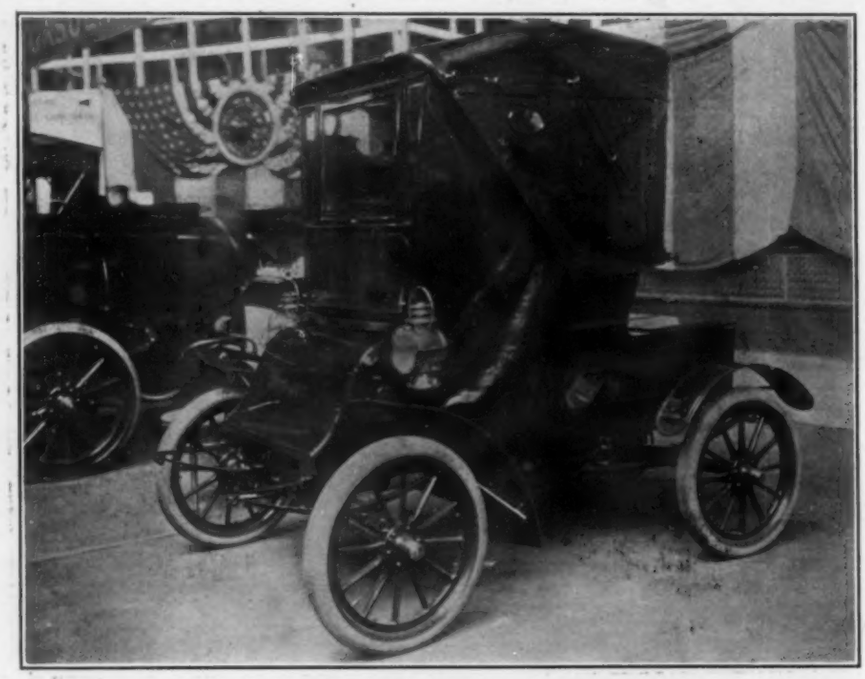
The wheelbase is 91 inches. The frame is built of angle iron with all joints riveted. Springs are 42 inches long, giving luxurious carriage suspension.

A two-passenger car is, in outline and detail, much like the 1903 model, but with an increase of power, the 8-horsepower engine being replaced by one giving 12 actual horsepower on brake tests. The wheelbase has been lengthened 7 inches and a spur differential substituted for the miter gear used last year. A runabout chassis is exhibited and a set of change speed gears.

Studebaker Bros. Mfg. Co.—The gasoline car marking the entrance of this big South Bend carriage making company into the field of explosion motor vehicles was not on hand during the first half of the week. Another new Studebaker vehicle is a 1 1-4-ton open-bed electric wagon which has a number of special features. It has a double motor power equipment with underslung battery and a channel iron frame. The motors are suspended from a crossmember of the frame behind the rear axle and drive to jack-shafts behind the motors. Sprockets at the outer ends of these shafts drive chains running forward over large sprockets bolted to the drive wheel hubs. The jack shafts are driven from the inner end by spur gears from the armature shafts. The inner end of each jack shaft carries a brake drum, on which operates a double acting brake. Distance rods with turnbuckles regulate the tension of the chains. The suspension of the motors from the frame relieves them of all the severe jolts sustained by the axles. A platform spring support is used at the rear, a transverse leaf spring connecting the rear ends of the longitudinal rear springs. Another novel feature of this wagon is the steering mechanism. The lower end of the steering post, which is turned by hand wheel, carries a pinion operating in an internally toothed sector journaled in a bracket below the frame and having a forwardly extending arm connected by a socket joint to a rod whose other end connects with one of the steering knuckles. The joints take up all vertical movement of the body. The brakes are independently set by two foot levers.

One open and one buggy top stanhope and a folding top chelsea with divided front and rear batteries and single motors suspended under the middle of the vehicle complete the display.

Elmore Manufacturing Company.—A physician's folding top stanhope with removable bevel glass front and side storm curtains, that, when in place, completely enclose the operator and passenger, is a pleasing new production of the two-cycle motor cars made by this company and displayed at the show. The stanhope is very low hung and has wheel steering. Obviously the greatest degree of protection against stormy weather is provided by the top, front and side curtains which can all be taken down to make the vehicle an open carriage in pleasant weather.



ELMORE PHYSICIAN'S STANHOPE, WITH FOLDING TOP.

Besides this model, two 10-horsepower detachable tonneau models are shown. In the stanhope, the twin cylinder two-cycle engine is disposed vertically under the operator's seat and drives by central chain to the differential in the rear axle, but the new tonneaus have single-cylinder two-cycle motors disposed horizontally under the middle of the body and accessible from above by removing the floor of the tonneau. The water tank is over the engine and the gasoline tank under a curved dash. A planetary transmission at the right side of the motor gives two forward speeds. The two-cylinder motor front tonneau brought out last year has been continued with improvements as one of the Elmore models for 1904, but none was ready for display at the show.

The Matheson Motor Car Company.—Shows a four-cylinder car possessing novel points in design which will be mentioned in a special article. The cylinder dimensions of the engine are 4 1-2 x 6 inches, with range of speed from 500 to 1,200, indicating 24-horsepower at 600 r.p.m. Both jump spark and make-and-break with Sims-Bosch magneto are provided.

Sandusky Automobile Company.—Has three light cars and a chassis, possessing points of novelty and merit. The latest model is a single cylinder runabout with horizontal 4 5-8 x 5 3-4 engine, bolted to cross members of the continuous angle-steel frame. The change speed is direct drive, through roller chain to live rear axle. The first speed and reverse are obtained by sliding gears, arranged above an extension of the transverse engine shaft which carries a hollow sleeve to which is attached one member of a face clutch, the gripping member being attached to the solid engine shaft. When first speed is in engagement, the drive is through two pinions, two gears and lever actuated clutch. The change speed will be shown in detail in an early issue of THE AUTOMOBILE.

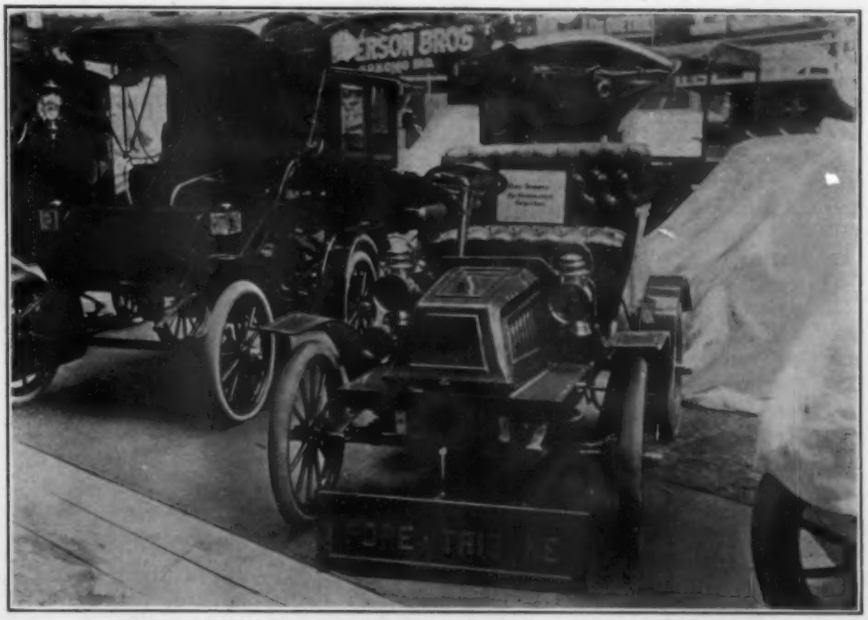
The Autocar Company.—Two Autocars are shown, a 1904 tonneau model and the new 1904 runabout, the smaller car being designed to meet a popular demand for a single seated machine with double-cylinder giving ample power on stiff grades and a sustained speed of 35 miles an hour on the level. The engine is 3 3-4 x 4 inches, two horizontal cylinders, opposed and arranged transversely under a bonnet with a new vacuum oil tank bolted to the crank-case and forming a top cover to it. Oil is supplied to both pistons, connecting rods

and all engine crank bearings. Three hundred miles capacity is claimed for the oil tank without attention from the driver, the feed ceasing when the engine is at rest.

Several improvements have been introduced into the change speed, the main drive shaft and gear reduction shaft both being fitted with 5-8 inch ball bearing. Wheel or lever steering is optional on the larger car, the wheel steering model being provided with change-speed and clutch levers attached to the steering column. A chassis of the higher powered model shows marked accessability to the engine, speed change gears, oiler, etc. The engine dimensions are 4 x 4 inches with a range of speed by throttle and spark control from 600 to 1,600, giving 12 horsepower on top engine speed

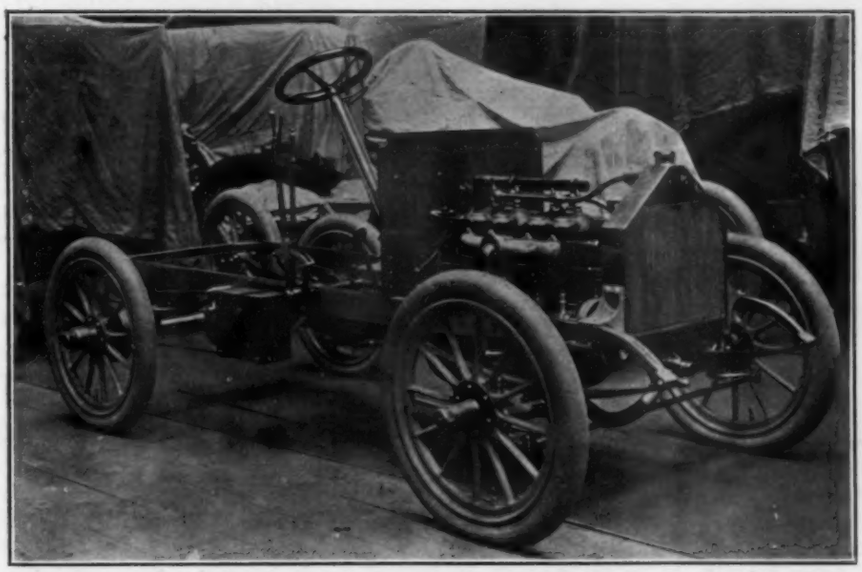
Geo. N. Pierce Company—The new two and four-cylinder Arrow cars share these spaces with a Pierce stanhope, with Victoria top and folding front seat, and a Pierce doctor's car. The four-cylinder is fitted with a cast aluminum King of the Belgians tonneau, canopy and glass front. The power plant and transmission of this car was described in detail last week. The engine gives 24 to 28 horsepower and has about 100 pounds per horsepower to drive. The two-cylinder car will undoubtedly prove to be a popular model. It is fitted with an engine 3 15-16 x 4 3-4, with Mercedes type transmission. The frame is trussed tubular construction with 81 inch wheelbase, 32 x 3 1-2 inch wheels. Engine control is accomplished by suitable levers grouped around the steering column. The two and four cylinder cars are very close in details and lines to accepted French practice.

Berg Automobile Company.—Two canopy-top tonneaus, a limousine and two chassis of the four-cylinder cars are shown. The chassis are of very different design, one that attracts especial attention having a pressed-steel frame and showing the highest class of machine work.



POPE MOTOR CAR CO.'S FRENCH STYLE 6-HP. VOITURETTE.

The limousine car has a Quinby aluminum body, the upper portion of which, comprising the windows and the front extension of the roof, is removable leaving an open four or five passenger touring car of tonneau type. Entrance to the enclosed part is through a rear door. The upper portion has windows on all sides and back, the corner windows being of bent glass. Finish is automobile red running gear and body, natural finish mahogany window frames, and black trimmings. The limousine and the large tonneau are each of 24-horsepower, built in an armored wood frame, equipped with four-cylinder vertical motor. The transmission gearing is housed in an aluminum casing that also encloses the bevel gears and differential on the countershaft, from which drive is by side chains.



BERG FRENCH TYPE PRESSED FRAME CHASSIS.

The Rainier Company.—Pleasure vehicles are the particularly notable feature of the exhibit of the Vehicle Equipment Company, which has earned such a pre-eminent position in the heavy electric truck line. In addition to the broughams and victoria of last year, two new models are now shown—a landaulet and a demi-coach. All of the four models are handsome large vehicles, comfortable and luxurious. They have the pedestal axle guides, the underslung battery, the double motor equipment, the external gear drive and expanding brakes that are regular features of the V. E. Co. line. The pedestal arrangement has been improved this year on the pleasure carriages by placing heavy steel rollers on the axles to run in the pedestal guides, reducing to a minimum all friction as the body rises and falls in relation to the axles. The pedestal guides are attached to and depend from the frame extensions which support the body on the springs. The external driving gears are cast with internal drums inside of which operate the expanding brakes, thereby relieving the axle of all forward pull when the brakes are set. The batteries are arranged in trays that one man can easily withdraw through the side-door of the battery box to replace a broken strap if necessary. The brougham, landaulet and demi-coach all have front pedestals as well as rear ones, but the victoria has a single set at the rear. The bodies are of wood and exemplify the best in the coach-builder's art.

Strikingly prominent as the most imposing display of heavy commercial vehicles are, a huge stake wagon, especially built for the Otis Elevator Company and

having an electric windless or winch under the seat for hoisting heavy elevator materials in lofty office buildings; a five-ton open beer-wagon, built for the Anheuser-Busch Brewing Association and on the side of which is displayed an enlargement of a letter ordering twenty more duplicate wagons; a covered three-ton wagon for the J. Kennard & Sons Carpet Co., a special three-ton wagon made for the Moxie Nerve Food Company and fitted with a special white body trimmed with brass rails and having a cover and large panels at the ends of the driver's seat and at the rear end, representing bottles filled with Moxie; a two-ton covered wagon built for the Manhattan delivery wagon belonging to the Anheuser-Busch company.

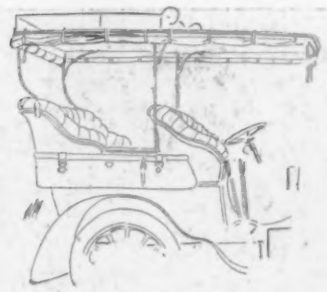
New features of the big beer trucks and the Otis truck are sand boxes suspended below the platform and having spouts leading down in front of the rear wheels. The tires are all very broad—eight inches on these two trucks, solid and a nearly flat tread.

All V. E. Co. vehicles are characterized by rectangular channel iron frames with underslung battery boxes under the middle, leaving the top of the platform clear for the construction of any sort of body desired.

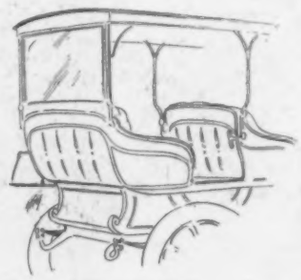
Pope-Robinson Company.—Two big four-cylinder King of the Belgians tonneau cars, one finished in blue with red running gear and having folding unpainted top strapped forward to the front end of the chassis frame, the other finished in white with red running gear and red upholstering, but without top. Both cars have side hampers and are fully equipped. These cars belong to the highest type of the American product, having the prominent features of the vertical four-cylinder motor, front tonneau with angle steel frame, barrel hood, Whitlock radiator, artillery wheels, etc. Among the changes in them for this year is the adoption of the regular clash gear speed change.

Kirk Manufacturing Company.—The Yale is a strictly American type car, built externally on up-to-date French lines. The cars on view are the regular tonneau pattern and special finished cars of the same type with larger tonneau, canopy top and glass front. The chassis is built up of angle iron, carrying the two-cylinder opposed horizontal engine, 5 x 5 inches, giving 16-horsepower at 1,000 r.p.m. Throttle and spark advance levers are carried on the steering column under the wheel. Sight feed lubricators and spark coil are fitted on the dash. The Yale-California motor cycle is shown, the Kirk Manufacturing Company having acquired the right to manufacture this well-known machine east of the Rocky Mountains.

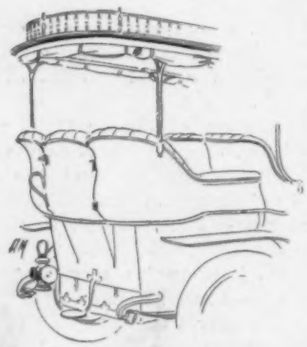
Peerless Motor Car Company.—A particularly fine showing is made at this exhibit of the Peerless line. This company has been following French practice for the past three years. The most interesting



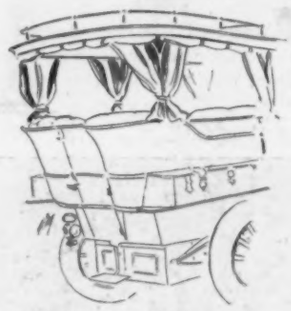
LOCOMOBILE.



PACKARD.



HAYNES-APPERSON.



COLUMBIA.

WHITE.

ARTISTIC LINES IN DE LUXE CARS.

feature of the exhibit is the beautifully finished 24-horspower chassis. The Mercedes type pressed steel frame and all steel and iron parts are draw-filed and the copper and brass parts burnished. The mechanical details of the car have been described in a recent issue of THE AUTOMOBILE.

The finished cars shown are: A 35-horsepower, with a roomy King of the Belgians tonneau with canopy top and glass front; a 24-horsepower with a tonneau of the same type; a round-front brougham, with stylish front seat for the driver; two 24-horsepower limousines, one a standard style with hinged front seat and the other with a single seat, the entrance to the carriage being open and particularly easy.

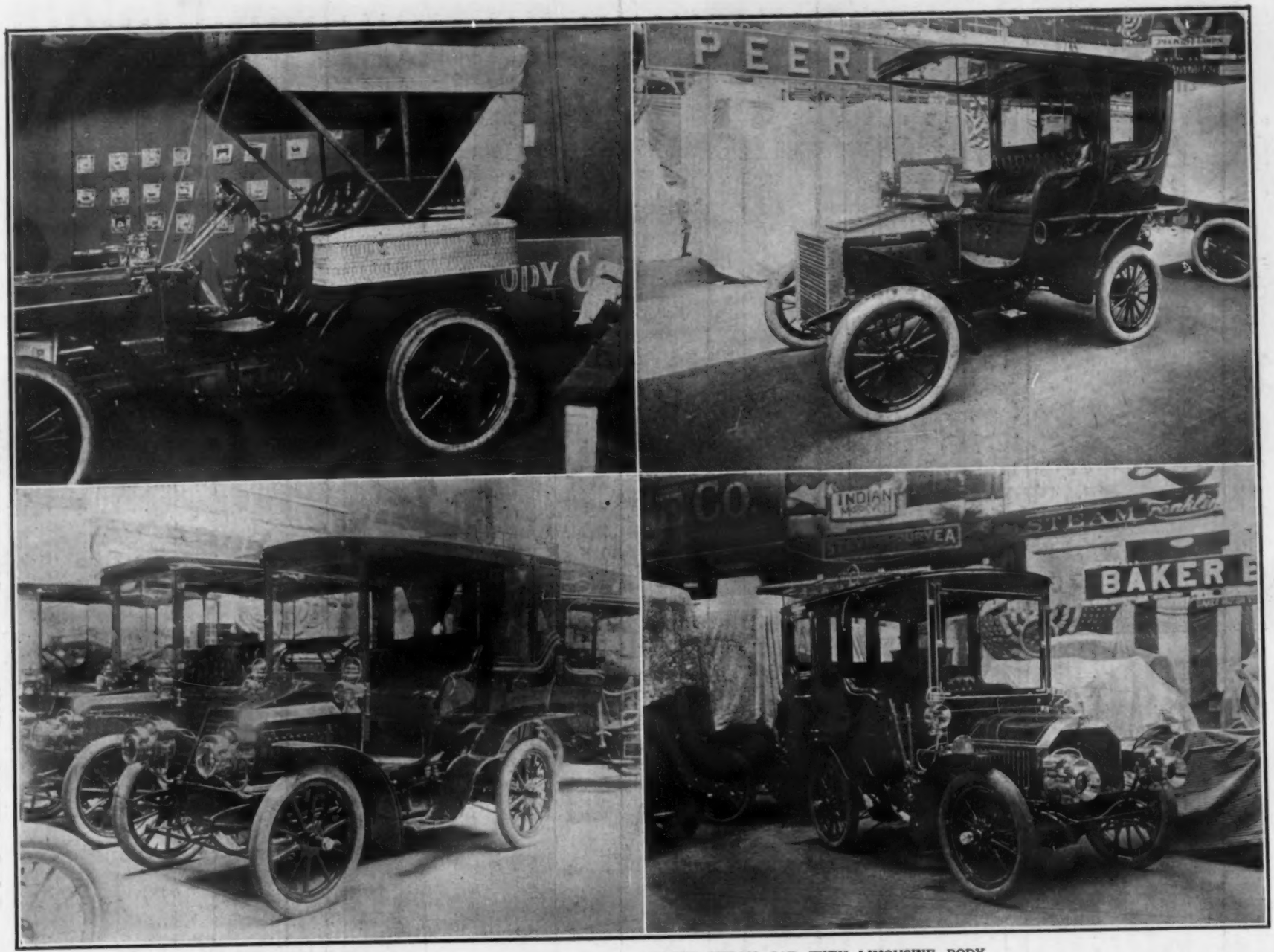
The limousine models are triumphs of the carriage builders art, and quite as luxurious as the finest French automobiles *de luxe*.

Upton Machine Company.—A single car is shown with four-cylinder, 4 x 4 1-2 inches, upright engine, Whitlock radiator, aluminum tonneau with canopy top and glass front. The ignition system is make-and-break with an ingenious device of the company's design, operating by cams to advance or retard the spark. A departure from accepted practice is found in the silencer; the exhaust being discharged into separate steel tubes, extending half the length of the car into a manifold and thence to the muffler. The burnt gases are comparatively cool when they leave the muffler and back pressure is practically eliminated.

Two carbureters are fitted. The air supply and spark advance are controlled by conveniently located levers on the steering column. Throttling is accomplished by pressure on a foot button. Car control is from the left side of the vehicle.

F. W. Wheeler.—The Schebler carbureter, made by the Central Motor Car Company of Indianapolis, in four sizes from 1-2 to 1 1-4 inches, is shown in the stand of the National Motor Vehicle Company by F. W. Wheeler, sales agent for the United States. These carbureters are of aluminum, having a semi-spherical mixing cup, an automatic valve in the air inlet regulates the gas mixture according to the speed and suction of the motor. The throttle valve at the top has a triangular opening into the intake pipe of the engine. A complete description of this carbureter will be presented next week.

Electric Vehicle Company's exhibit consists of ten vehicles, representative of the latest types of Columbia gasoline cars and electric carriages and trucks. A runabout of new model is shown which is claimed to be the lightest electric made with equal battery power. It has a speed of 15 miles an hour on the level and a capacity of 40 miles. Very few changes have been made in the victoria, though certain minor details have been improved. A second victoria is shown, with underslung bat-



AUTOMOTOR TONNEAU WITH CAPE CART HOOD.

BERG LIMOUSINE WITH REMOVABLE TOP.

WHITE STEAM CAR WITH LIMOUSINE BODY.

LOCOMOBILE LIMOUSINE WITH POLISHED SILVER TRIMMING.

tery and rear control, driven by two 80-volt, 16 ampere motors.

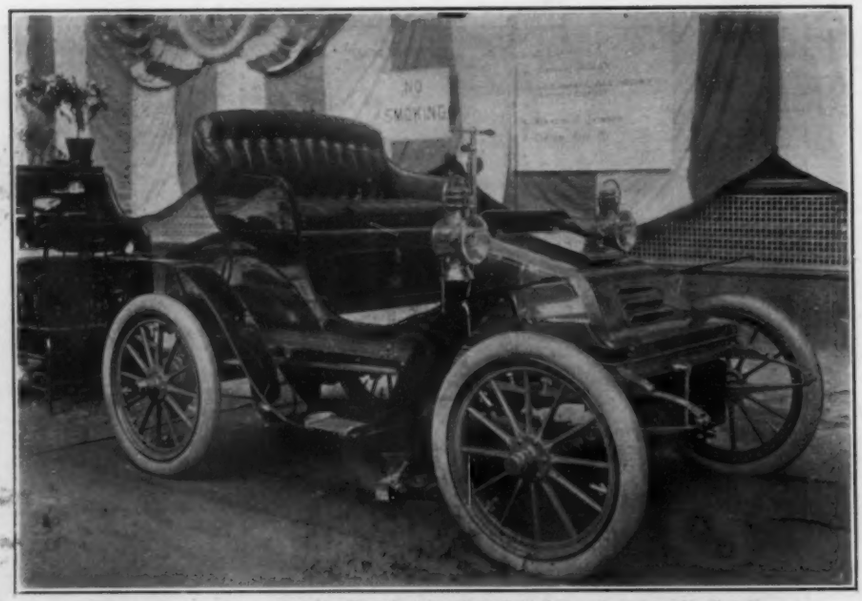
An extension front brougham, closely resembling the 1903 model, and a handsome landau complete the line of town carriages. An important part of the exhibit consists of two one ton capacity delivery wagons, one the properly of R. H. Macy & Co., and the other belonging to the Southern Express Company.

Four models of gasoline cars are shown, two of the same type as the Mark XLI model which made the 76-hour record run from Chicago to New York, the identical car being shown refinished. The other example of this type is provided with a luxurious limousine body and is one of the handsomest cars in the Garden.

The new 30-horsepower four-cylinder car is built on similar lines to last year's car, but is fitted with Mercedes type bonnet, cellular radiator, pressed steel frame and up-to-date features throughout. A number of changes and refinements have been made in the engine and car which are deserving of detailed mention.

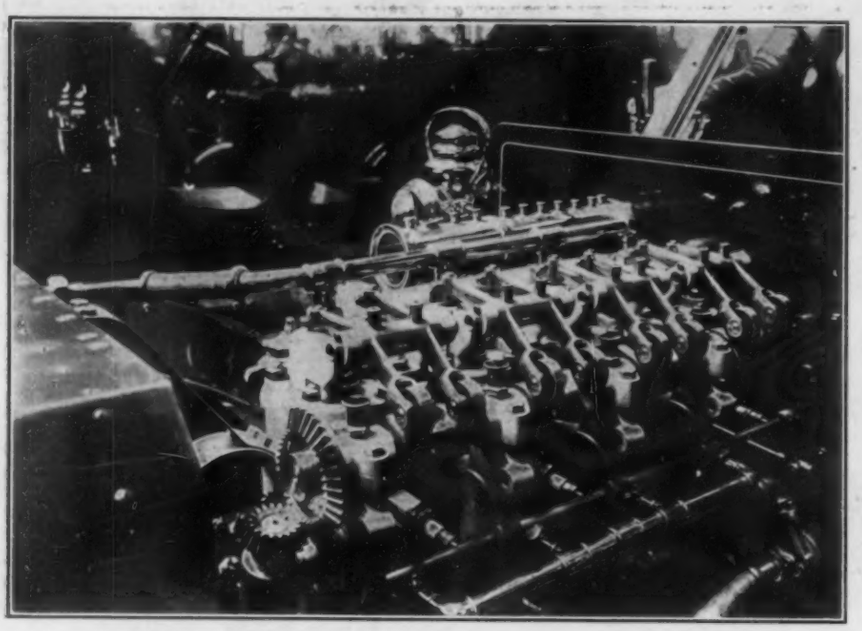
The most pronounced novelty of the company's exhibit is a medium-sized car with a horizontal two-cylinder opposed engine forward, under a bonnet of new design. The change speed is of the sliding gear type with the usual three speeds forward and reverse, and direct drive on third speed. Control is from the left side with wheel steering. The engine is provided with an oil reservoir of liberal capacity, located over the crank chamber, with feed automatically controlled by the compression in the crank chamber.

Duryea Power Company.—The latest product of this veteran maker is exhibited and is a four-passenger vehicle of very attractive appearance and containing several novel and original features of construction. In general, its shape follows the regular Duryea two-passenger model, the additional seating capacity being obtained by a folding jump seat in the rear, which has the very excellent feature of not being a disfigurement to the vehicle when closed as it then folds entirely out of sight except for two extension hinges, and gives the regular box effect to the rear of the vehicle. When opened, it is held rigidly into place by a pair of hinged supports on the inside of the body which lock against the back of the box in addition to the outside extension hinges. These outer hinges are not only ornamental in appearance but are a distinct advantage to the vehicle when the jump seat is closed as they serve to protect the rear of the box from being marred by other vehicles, etc. As one adult or two children can be carried on the front box, facing backward, as in the regular model, the addition of the jump seat gives a possible seating capacity of six persons.



AUTOCAR 1904 RUNABOUT, OPPOSED HORIZONTAL MOTOR IN FRONT.

The standard three-cylinder engine with the one hand control which has so long been a feature of this make, is, of course, retained, and there are a number of minor improvements, some of which present a similar originality. For example, no binding screws or wires are used in the batteries, the cells being joined by bearing the carbon of one against the zinc of the next and so on, the carbon poles being tipped with copper to give a better connection. A small button on the side of the seat may be used to throw on the entire battery power in addition to the magneto in starting, producing an unusually fat spark and making it easier for a woman to start the motor. Another new feature is a tubular front frame pivoted to a ball and socket joint under the middle of the body, making a very flexible running gear. The circulation is by both a thermo-syphon and pump and a radiator in place of the condensing tank carried in the rear on older models.



VALVE ACTUATING MECHANISM OF MATHESON ENGINE.

Fischer Motor Vehicle Company.—This company exhibits a five-ton machinery truck operated on the well-known Fischer combination gasoline and electric system, having a 20-hp. water-cooled motor, which drives a dynamo of 8 k.w., operating two electric motors of 7 1-2 horsepower each on the rear axle. There is an auxiliary storage battery containing 48 cells of 136 ampere-hour, three-hour discharge. The gasoline engine runs at a constant speed of about 500 r.p.m., giving a speed of 6 miles an hour on the level with the full load, or of 7 miles an hour empty. The vehicle will climb a 17 1-2 per cent. grade with a load of 4 1-2 tons. The gasoline tank has a capacity of 20 gallons, sufficient for a run of thirty to forty miles according

to road conditions. The vehicle is started from the seat by using the generator as a motor and taking current from the battery.

Gibbs Engineering & Mfg. Co.—A five-ton electric brewery truck, with a capacity of 25 miles at a speed of six miles an hour with full load, is exhibited. The equipment consists of a 44 cell, 19 plate battery of 300 ampere-hour capacity, operating two 3 1-2 hp. motors, hung from the body and transmitting the power through a reduction gear, which is enclosed and runs in oil, by a chain transmission to sprockets on the steel rear wheels. The tires are of a novel composite pattern, consisting of a four-inch solid rubber tire projecting above two steel tires adjoining it on either side. The rubber tires will carry the load up to 400 pounds per square inch of bearing surface, but under a heavier load they are compressed to the level of the steel tires which then take the load. This arrangement greatly increases the life of the tire and reduces this part of the operating expense. The controller is located in front on the frame and the control levers are placed on the steering post. There are four speeds ahead and two reverse, and an electric brake in addition to a powerful foot-brake.

J. M. Quinby & Co.—A 24-hp. Panhard fitted with the latest type, seven-passenger King of the Belgians aluminum body, in which all of the five tonneau passengers face forward, and a 24-hp. Peerless, with Balloon or demountable limousine body, are shown, together with a placard stating that the real Quinby exhibit is to be found on the Smith & Mabley, Peerless, Panhard, Decauville, Berg, Buffum, Mors, Renault and Rochet-Schneider cars elsewhere exhibited. In all nineteen cars fitted with distinctive bodies of this make are exhibited.

Springer Motor Vehicle Company.—This firm exhibits a 20-horsepower tonneau touring car with a two-cylinder opposed horizontal engine and double chain drive and a 16-horsepower delivery wagon with a capacity of 3,500 pounds. A 24-horsepower car with an air-cooled motor is demonstrated outside of the Garden.

E. R. Thomas Motor Company.—The Thomas three-cylinder 24-horsepower car, which was described in detail in THE AUTOMOBILE of January 2, is shown with a new body called a "Thomasine", which attracted much attention. It is a modification of the limousine body, the rear portion being entirely enclosed and having large glass windows on all four sides. Entrance is through a rear door which also has a glass window. The interior is fully upholstered in black leather. Four persons are accommodated in the enclosed portion and two in front, giving a seating capacity of six in all. A surprising feature of the "Thomasine" is its low extra cost, which is only $250. The 24-horsepower touring car, the chassis and the Thomas "Auto-Bi" motor bicycle were also shown.

Cadillac Automobile Company.—Three complete cars, a runabout, a surrey and a tonneau touring car are shown, in addition to a chassis. A number of improvements are noticed, chief of which is the increase of the horsepower from 6 1-2 to 8 1-4, and the use of a pressed steel frame throughout. The front axle is equipped with a compensating spring which takes up inequalities of the road to an unusual extent. A new spark coil, the Varley duplex, is used, which allows of the cleaning of the platinum points without losing the adjustment. A new battery switch permits either or both sets of batteries to be used as desired and turns the lubrication on and off automatically. There is an automatic device to prevent a back kick of the motor and

CHAOTIC CONDITION OF MADISON SQUARE GARDEN SATURDAY AT 2 P. M., SIX HOURS BEFORE OPENING.

which closes the opening through which the starting crank is inserted unless the spark is in the proper position. There is a small wire lever on the side of the car near the starting lever by which the carbureter may be flooded. The suction tube of the carbureter has been lengthened so as to take in warmer air from above the engine. There is a new style muffler which allows a more rapid expansion of the burned gases and which exhausts through a series of diaphragms, doing away with all back pressure. The slow speed foot-pedal has a ratchet attachment for use in ascending a long grade. There is also a ratchet added on the brake.

General Electric Company. — Electric motors, controllers, and charging plants. A full mention will be made in the next issue.

Show Observations on Design.

A few years ago pretty much all the French vertical motors had crankcases just large enough for the cranks and connecting rods to move in, and the cam shaft was carried by bracket bearings outside the case The rollers were carried by oscillating arms, and all the valve mechanism was exposed. Then some one extended one side of the crankcase upward to enclose the cam shaft, and the rocker arms were dispensed with, the rollers being put in plunger rods directly over the cams and under the valve stems. This permitted everything except the valve stem and spring to be enclosed, and the beauties of the arrangement caused it to become instantly popular. As a result, the thing was rather overdone, and the effort to enclose awkwardly-arranged camshafts transformed many crankcases into shapeless hulks, whose chief recommendation was that they lent themselves to the abolition of the false frame with comparatively little spread of "wings."

But these overgrown creations had more than the superficial addition of metal against them. On account of their shape, they were much less well adapted to resist the forces due to the explosive impulses than the old, compact, cases; and to overcome this weakness of form, further metal had to be used. Consequently, a tendency to react is observable, and in some of the best machines the crankcase proper assumes its old compact form, and the cam shaft is carried in little boxes bolted to the exterior of the case and enclosing the cams and roller forks. This arrangement seems on every ground superior to either of the older forms. It gives a very neat and convenient form of bearing as close as possible to the working points (the cams); the working parts are oiled—through openings in the case under the boxes—and covered; and metal is wasted neither in constructing a large and useless casing nor in crudely atoning for initial faults in design.

Where mechanically opened inlet valves are used, on the opposite side of the cylinders from the exhaust valves, the difference between the two latter forms of design is naturally accentuated. The principal difficulty with the last-noted design is to enclose the cam shaft gears. This was done, in one engine observed, by what might be called a *tour de force* in molding, one-half of the casing around each of the large gears springing out from the extreme front of the crankcase, beyond the shaft bearing, and the other halves taking the form of removable covers screwed in place. Though doubtless there was in reality metal enough at the narrow bases of these wing-like extensions to make them rigid, they looked very delicate, and suggested the desirability of making such parts separate and bolting them in place.

The diversities of opinion and practice in regard to motor design seem, in spite of a general tendency toward standard types, to be still in an acute stage. The controversy over the relative merits of automatic and mechanically-operated inlet valves is as tedious and as far from settlement as ever. Two or three first-class makers, after an exhaustive threshing out of the whole subject, have either retained the automatic valve or adopted it in place of the other; while, on the other side of the question, as many or more cases could be cited. Perhaps the subject is best summed up in the remark of one maker, after a careful test of both types under similar conditions, that the seeming failure of the mechanically-operated valve to show results better than the automatic was due in reality to poor design, and that when the design was right it gave slightly greater power when pushed to its utmost. The chief reason given by the maker, however, for preferring the mechanically-opened valve was that it made a quieter running engine.

Another point yet to be threshed out is the relative advantage of casting cylinders separately or in pairs. This, however, is a matter of more interest to the constructor than the user, whose main interest in the subject concerns the relative expense of repairing one or the other form. From this point of view, the separate cylinder has an undoubted advantage, since it is not necessary to throw away two cylinders because one—for example—is cracked. On the other hand, the separate cylinder is—on paper—a little the heavier. It may not actually be heavier, even if its water jacket be cast iron instead of copper, because a greater allowance for variation in castings must be made when two cylinders are cast together, since the distance between centers cannot be varied to accommodate the casting; and also because the larger casting is the more complicated and is more likely to be defective unless metal is added to "favor" it.

Practically, there seems to be little doubt that in medium and small motors metal can be saved by casting the cylinders separately, and the smaller the cylinder the greater will be the saving. It may be added parenthetically that by this means the cylinder walls may be made so thin that reboring becomes hardly possible, and that this fact seems to be partly accountable for the extreme light weight of certain motors at the show.

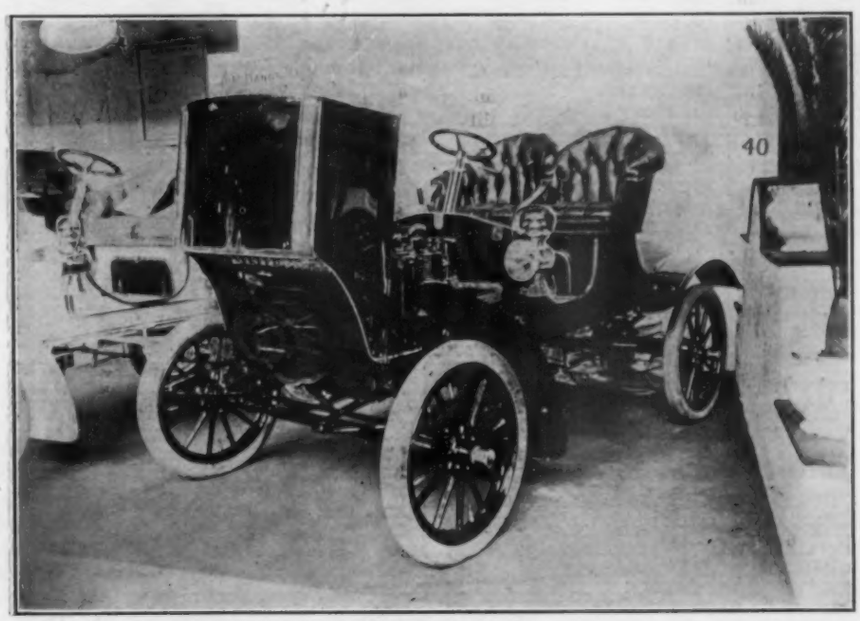
A third point which seems, like the phœnix, impossible to down, is that of spark plug position. Long ago everybody thought that that had been settled for good and all by putting the plug in the valve chamber where the fresh mixture would strike it and the surplus oil in the cylinder would not; but at least one motor —and a good one—was observed at the show which had the spark plugs in the center of the cylinder heads. Better methods of lubrication, non-sooting plugs, and the auxiliary spark gap may yet turn the wheel of fortune to the point where the place theoretically best for the igniter—the center of the fresh charge—will be the one sought. When that happens, spark leads will be materially reduced, and, on account of the better form of the resulting indicator card, the power will be measurably increased.

But, after all, such a result as that is as easily gained any day by using two plugs, on opposite sides of the cylinder, instead of one; and it seems possible that a more important improvement will be the placing of the inlet valve in the center of the cylinder head. Where this valve is opened mechanically, this is perhaps a matter of no especial consequence, but in the case of a high-duty automatic valve it is of considerable moment. This is because, the faster such a valve has to work, and the larger it is, the stiffer (in proportion to the valve's area) must be the spring, and the greater must be the suction to overcome it. Now, the valve located in a valve chamber has not much more than half of its circular opening available, because the suction is, so to say, all on one side; but the valve in the center of the head has its full opening effective, and therefore can be smaller and lighter, and have a lighter spring, for the same duty.

Another advantage which apparently may be credited to the same arrangement is that, with suitably disposed exhaust piping and a not too restrictive muffler, the momentum of the exhaust gases may suck the combustion chamber clean, drawing in fresh gas to replace the burnt, so that the engine gets more than its piston displacement of fresh gas. This at least would seem to be the interpretation to be put on the rather guarded explanation by one very successful designer for the high power which his engine undeniably shows.

EXHIBITS IN ARENA BOXES.

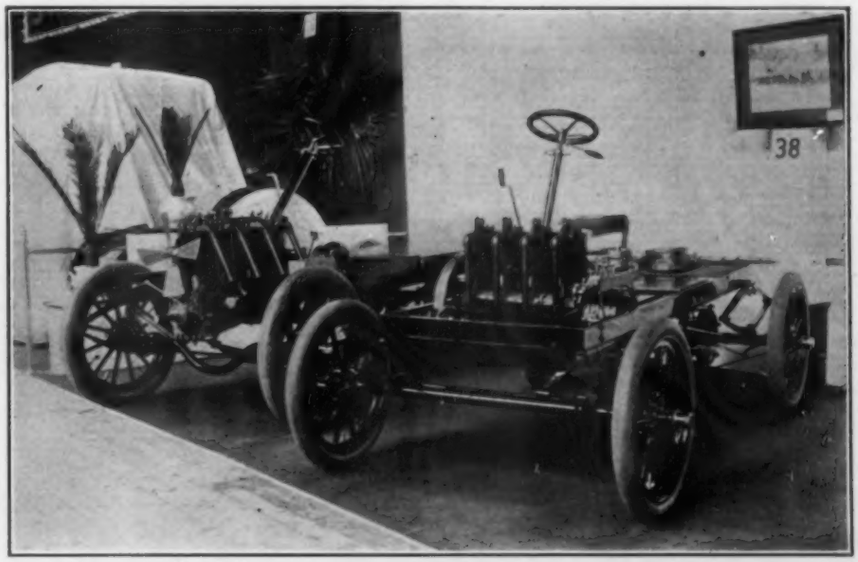
Franklin Manufacturing Company.—The remarkable advance in the past year or so of the air cooled motor was exemplified in the 24-horsepower Franklin motor which was one of the features of the show. This motor comprised four upright steel cylinders, each 5 x 5 inches, each carrying 25-inch wide copper flanges, arranged longitudinally under a hood in front. The cooling is further aided by a fan driven by a chain from the motor shaft. The cylinders are separate and spaced well apart upon the cast-iron crankcase. The crankshaft has five main bearings, three intermediate ones in addition to the two ends. All bearing adjustments inside the engine are locked in position. The crank pins are unusually large. The valves are all located in the head, so as to limit the exposed area of the combustion chamber and it has been found by a brake test that the elimination of the valve pockets on the sides of the cylinder has made a difference of more than 20 per cent. in the power of the engine. The oiling is by the splash system fed by a force feed pump and the supply varied in proportion to the speed of the motor. The throttle, which is a simple gas valve in the admission pipe, allows of slowing the car to six miles an hour and of speeding it to 45 without change of gears. This is accomplished by a compensating carbureter having a floating valve which varies the flow of gasoline according to the flow of air, making adjustments of the mixture by hand unnecessary. There are three forms of ignition, two sets of cells and a dynamo. The circuit breaker is of the wipe type.



FRANKLIN CAR WITH FRONT-HINGED BONNET RAISED.

The transmission is an integral part of the engine kingbolted to the crankcase and revolving as part of the flywheel on the high speed. It has either two or three speeds ahead and reverse. Each speed is obtained by the gradual application of a hand brake, which makes the bevel gear drive perfectly safe, it being well known that on large cars bevel gears ordinarily cannot be used with shifting gears, as the shock of the changing speeds crystalizes the metal in the pinion driving the differential. The bevel gear on this car is also saved from shock by full elliptic springs on rear axles, which give when the clutch is applied. The brakes are of the internal expanding type on the rear hubs with an emergency brake on the transmission.

The throttle and spark advance levers are mounted on the steering column as is also the gasoline valve. There is only one lever on the right side which operates the clutches, and the two brakes are operated by foot levers. The engine, having four vibrating coils and segment and brush circuit breakers, can be started with the spark and can be started with cold engine. The frame is composite, of wood armored with angle steel. Only a chassis was exhibited, but a complete car was used for demonstrations outside the Garden. This was the original model and had been run 11,000 miles during the summer.



CHASSIS OF TWO STYLES OF FRANKLIN AIR-COOLED CARS.

Besides the 24-hp. chassis, that of the 10-hp. machine was also shown, together with two complete cars, one with, and the other without a tonneau. This lighter car is of the same general model as the 1903 Franklin, but with some important improvements. The wheel base has been lengthened from 72 to 78 inches, the springs have been made heavier on account of the addition of the tonneau. A loop has been made in the frame on the left side so that a part can be taken out to give access to the transmission without disturbing the engine, as was formerly necessary, the engine in this type being placed transversely in the frame. The storage batteries have been replaced by two sets of dry cells and the ignition shaft replaced by a commutator connected directly to the exhaust shaft. The switch has been removed from the outside of the seat to the dash and a sight feed to the transmission added.

The mural background of the Franklin space was very effective, and the effect was enhanced by the handsome appear-

ance of the cars, one finished in white and gold being particularly attractive.

Royal Motor Cars.—The Royal Tourist, exhibited by the Royal Motor Car Co. of Cleveland, Ohio, successors to the Hoffman Automobile and Mfg. Co., in spaces 11 to 14 of the Arena platform, is in every way an entire departure from the Hoffman model of last year. The latter had a single cylinder motor placed horizontally under the seat, while the Royal Tourist has two or four vertical cylinders of 8 horsepower each, giving 16 or 32 horsepower, placed under a hood in front, together with a cellular radiator and other modern features of construction. The exhibit comprised the 16-horsepower car complete, together with two chassis, of 16 and 32 horsepower, respectively. The chassis were identical except as to the motors and the fact that in the 32-horsepower model the radiator was set farther forward on the frame to allow for the space required by the additional two cylinders.

The frame is of pressed steel, made from polished cold-rolled stock, flanged top and bottom and tapered from the middle to the ends, which are downturned to receive the spring toggles. The springs have six leaves on the rear and five on the front and are two inches wide. A steel subframe supports the engine and transmission. The front axle has roller bearings and forward steering gear connections. The rear axles are of rigid construction and are fitted with roller bearings. The wheels are 34 inches in diameter and are fitted with 3 1-2-inch tires. The tread is standard and the wheelbase 90 inches. The motor in the 16-horsepower car has two 5x5 inch cylinders with a maximum speed of 1,300 revolutions and is capable of being throttled down to 250 revolutions. The 32-horsepower motor is identical except for the additional cylinders placed tandem on an extended aluminum crankcase. The intake valves work automatically and are accessible by removing three nuts and loosening a universal joint on the intake pipe. The governor acts directly on the throttle and the spark is independent. The radiator is of the cellular type with a fan attachment and has no auxiliary tank. The gasoline tank has a capacity of fifteen gallons and is placed under the front seat.

A cone clutch is used with universal connection with the transmission which is of the three-speed sliding gear form, with an oiltight and dustproof aluminum case. There are three speeds forward and reverse with the direct drive on the high speed, by means of the universal joint on the main shaft and a bevel gear on the rear axle. Two large drum brakes are operated on the rear hubs and their setting by the usual side lever throws out the clutch. A secondary brake acts on the end of the shaft back of the gear case and is operated by a pedal, which also throws out the clutch. It is impossible to change the speed gear without also throwing out the clutch. The spark regulator and throttle control are operated from the steering column. The spark coil and force feed oilers are located on the dash, the latter not only oiling the motor bearings but the cranks and the transmission gears.

The body of the complete car exhibited was of the King of the Belgians type and made of aluminum. It had divided front seats with ample room for three passengers in the tonneau. It was finished in automobile blue with gold stripes and black leather upholstering. The 16-horsepower car weighs 1,750 pounds and lists at $2,300, or, at $2,500, with a canopy top and set of baskets. The 32-horsepower car weighs less than 2,000 pounds and lists at $3,000.

Auto Supply Co.—The Auto Supply Co. of Broadway and 50th Street, New York City, exhibited a large line of automobile parts, supplies and accessories. Single cylinder air-cooled motors, double-cylinder water-cooled motor, radiators, transmission gears, carbureters, clutches, steering knuckles and yokes, wheels, boilers, chains, lamps, horns, steering wheels, jacks, goggles and masks were shown. The lamps shown included a full line of the well-known Phare Solar. Noteworthy lamps in this line were the automobile or launch searchlights, made with either convex or lens mirror reflectors and a new oval side light with a particularly handsome ornamental top.

This company aims to supply automobile manufacturers with every requisite for making complete vehicles.

The headquarters of the De Dietrich car were also in this space, but no car was exhibited here, though a demonstrating car was in use outside of the Garden.

Bowser & Co.—S. F. Bowser & Co., of Fort Wayne, Ind., exhibited their well-known self-measuring gasoline and oil cabinets and tanks in space 56 of the arena platform. An advantageous feature of their gasoline storage system is that the tank may be buried in the ground at any convenient distance from the automobile house and connected by a pipe with the pump in the house. By this plan there is practically no gasoline kept in the house and the danger from fire is reduced to a minimum.

The well-known Monogram lubricating oils, manufactured by the Columbia Lubricants Company of New York were also exhibited in this section.

Gleason-Peters Company—Air pumps of all kinds from a small foot pump costing but a dollar, to a geared triple-cylinder power-driven machine costing $75 or $80 were exhibited by the Gleason-Peters Air Pump Company in space 3 on the Arena platform. Most of the hand or foot pumps offered by these makers are constructed on the well-known toggle joint principle by which the leverage on the piston rod increases as the resistance on the piston is increased, thus securing the greatest power near the end of the stroke when it is most needed. Coppered steel tanks for the storage of air, gasoline or water, air or steam gauges, and air whistles for motor boats were also shown.

Diamond Rubber Company.—Spaces 57 and 58 on the Arena platform were converted by the Diamond Rubber Company into an attractive reception room, draped with oriental hangings, furnished with Mission furniture and ornamented with flowering plants in pots and baskets. Here were exhibited the well-known Diamond tires in sizes from 28x2 1-2 inches to 36x5 inches.

An exclusive feature of the Diamond tires this season is the rubber covered lug, which replaces sixteen different sizes of the old leather covered lug, prevents chafing and makes the tires water tight. A swivel washer makes the former troublesome loose washer unnecessary. Occupying a conspicuous place in the Diamond exhibit were two Diamond tires which crossed the continent on the Packard "Old Pacific" last summer. Except for their chaffed sides and one or two tears they looked fit for indefinite future service, and attracted much attention.

A booklet containing reproductions of scenes from the Endurance contest of last fall, in which 50 per cent. of the cars which finished in the contest were equipped with Diamond tires, was distributed.

Prescott Automobile Manufacturing Company.—An impovement noticed in the 1904 Prescott, whose makers remain firm in their advocacy of steam as a motive power, is the enclosing of the entire underbody with a tight shield of aluminum and asbestos which prevents all danger of freezing when the vehicle stands in even the coldest weather and will retain the heat of the boiler for a considerable period after the fire is out. The temperature inside the underbody of a demonstration car used outside the Garden was tested by a thermometer and found to be 96 degrees. The casing is removable for summer use. Another new feature is the addition of ball bearings throughout the engine.

The Prescott cars are all of one pattern, an interchangeable extra seat with victoria top replacing the open top when desired. There is a drop front seat which may be used if required, giving space for four passengers, and which folds up when not in use. The weight is 1,000 pounds with the tanks empty and 1,400 pounds with tanks filled. The price is $1,100 with the open top and $1,200 with the victoria top. Both styles are exhibited.

The Walter Car.—The Walter Car, manufactured at 49 and 51 West Sixty-sixth Street, New York city, was exhibited in space 31 on the Arena platform. Only one model is made, of 30 horsepower, which was shown in the complete car with tonneau body and in the chassis alone. The body is of aluminum, with a King of the Belgians tonneau, seating three persons in the rear and two in front. The

fenders are also of aluminum. The frame is of pressed, cold-rolled steel with riveted cross supports and corner reinforcements. The motor has four independent cylinders with mechanically operated valves. The inlet valves are on the tops of the cylinders and are controlled by a sliding cam shaft which is operated from the top of the steering wheel with the spark advance. The transmission is of the sliding gear type with a bevel grear drive to the rear axle.

The bevel gear has a patented universal joint which has a large spiral spring to transmit the power in starting, which permits a start on the high gear from a standstill. When the full power is applied, the shaft locks into positive motion and the spring is not used. This is one of the features of the Walter Car for which special merit is claimed.

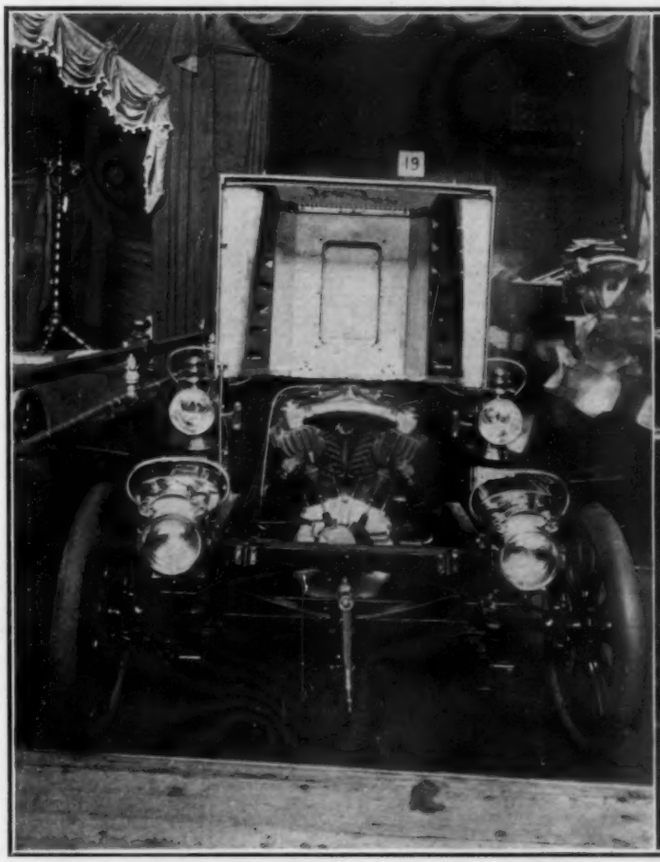
There are three speeds forward and one reverse, with the direct drive on the high speed. The gears run in an oil bath in an oil tight case.

The brakes consist of two internal steel expansion brakes on the rear hub, operated by a lever on the side of the machine, which will hold either forward or backward, and a foot-brake operating on the differential which throws out the clutch. The cooler is of the honeycomb type and is provided with a fan driven by a chain from the shaft. The weight of the car complete is about 2,400 pounds and the price is $4,000.

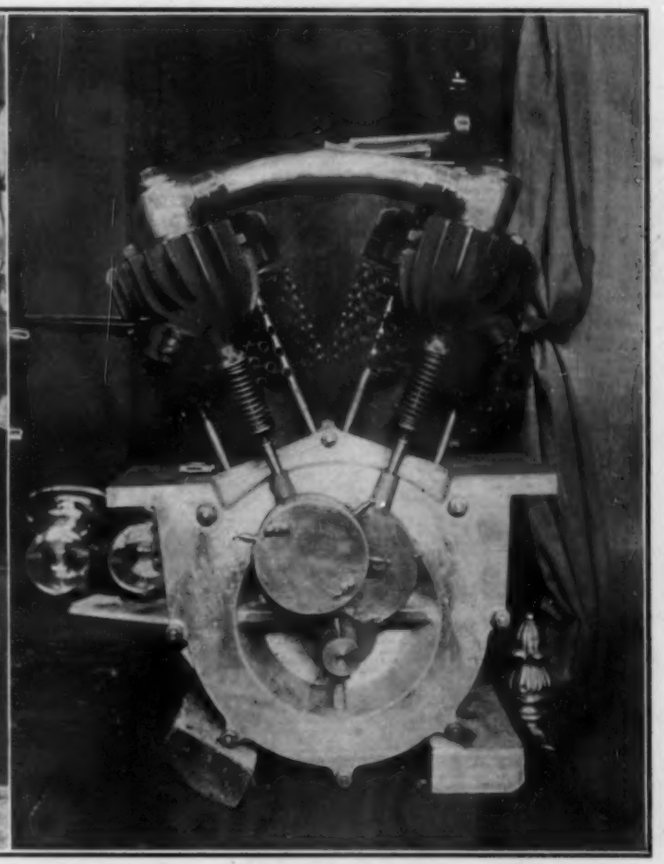
Regas Automobile Company.—An air-cooled motor of original and striking design, and an ingenious side entrance to the tonneau are features of the Regas touring car, which was shown for the first time. The motor which is made both with two and four cylinders has a particularly novel appearance, both on account of the position of the cylinders, which are set V-shaped on the crankcase, but also on account of the long, hollow cooling tubes with which they are studded and which give them a curious porcupine effect. Projecting from each cylinder are 172 perforated copper tubes, 1 1-2 inches long and one-half inch in diameter, which not only present a large amount of radiating surface but also provide circulation, the hot air passing out of the ends of the tubes drawing in cool air through slots in the tubes near where they are inserted into the cylinders. The tubes are flanged and shaped to fit the contour of the cylinder to which they are held rigidly in place by a perforated sheet steel jacket. This device is claimed by its makers to be the first instance in which both radiation and circulation are obtained without mechanical means.

The side-entrance tonneau has practically the same appearance as the ordinary tonneau except for the absence of the back door, giving a long comfortable back seat. Entrance is obtained by tipping forward either of the individual front seats, which are separately hinged to the body on their front edges. When tipped forward each seat carries with it a semi-circular portion of the side of the tonneau, making an entrance which is easily reached by two steps, one in the usual position, which also gives access to the front seats and the other at the height of the frame and directly opposite the tonneau entrance. The rear fender is curved to pass under the upper step and is partly supported by it. The entire device is both practical and ornamental.

Other features of the Regas car are as follows: Angle iron frame, full elliptic springs, solid, square axles, Hyatt roller bearings in all four wheels, individual clutch transmission, three speeds forward and reverse, spur gear differential, shaft drive to transmission, chain drive to rear wheels, Loomis float-feed carbureter, Loomis muffler, Brown-Lipe steering gear. Wheel base of two-cylinder car is 80 inches, of four-cylinder car, 86 inches; tread of both is 56 inches. The two-cylinder motor develops 12-horsepower and the four-cylinder motor gives 20 horsepower.



REGAS TWO-CYLINDER AIR-COOLED CAR, WITH HOOD RAISED.



THE REGAS ENGINE.

The Automotor Company.—This Springfield, Mass., concern exhibited its 1904 model touring car. This car was fitted with a King of the Belgians full aluminum body with folding hood made by the Springfield Metal Body Company and

made a very attractive appearance. The folding cloth hood, which was also seen on the Pope-Robinson car, weighs only sixty pounds, as against 150 for the fixed canopy top and when folded back projects over the back of the tonneau and makes an effective dust shield. In shape and operation it resembles an ordinary carriage hood, except that it is held forward by two straps with spring clips passing from the top of the frame to the dash. When the clips are released the hood folds flat. Side and front curtains may be used to completely enclose the tonneau or the entire body in bad weather. If not desired, it may be easily and quickly removed. The price of the top alone is $150.

In detail the car follows the general lines of the previous models of this construction, having vertical motor in front under a hood, irreversible wheel steering, long wheelbase, etc. The frame is of steel, to which are riveted the engine hangers, stops, sprigs and lamp brackets. The motor is of 16 horsepower, has four 3 5-8 by 4 inches individual cylinders. The cooling system consists of a cellular radiator with a forced draught fan in conjunction with a pump of the sliding vane type. The carbureter operates in connection with a governor which supplies a constant mixture regardless of the speed of the motor. The power is applied by a foot pedal and the throttle and spark are controlled from the steering column.

There are two systems of double acting brakes operating on the rear hubs and the main shaft respectively. The price with full aluminum King of the Belgians body, hood top and full equipment is $3,000; without hood top and with straight back body, $2,600.

Alden Sampson Manufacturing Company.—This new company located at Pittsfield, Mass., who have entered a car for the International Cup Race, exhibited their "Type 3A" touring car. This is a handsome vehicle following the lines of the Rochet-Schneider in general and similar to the Moyea car which is made at the same works. The motor, which is forward under a barrel-shaped bonnet, has four vertical cylinders, each 4x5 1-2 inches, giving 16 horsepower on a Prony brake test at 812 revolutions. The cylinders are cast in pairs, with heads and jackets integral. The transmission is by side chains from cross shafts to rear wheels. There are four speeds forward, giving 10, 20, 30 and 40 miles per hour respectively at normal engine speed with reverse on first speed. Double *baladeur* gearing arranged to operate on the selective system, enables either the first, second, third or reverse speeds to be entered from the neutral point without passing through any intermediate speeds. The outboard ends of the cross shafts run in ball bearings supported by universal brackets, preventing all cramping action.

The ignition is by a jump spark, the standard system comprising four coils with tremblers, a primary commutator on the dashboard and a dynamo driven from the flywheel, either by belt or friction pulley, in connection with storage batteries for starting from the seat. An alternative system employs but one coil and distributes the secondary current by means of a double commutator with a spark gap on the dash.

The circulation is positive, actuated by a geared centrifugal pump, mounted on the engine base. The cellular radiator holds six gallons of water, enough for 175 miles under ordinary conditions and there is no auxiliary tank.

There is a centrifugal governor acting on the throttle placed close to the inlet port. A hand lever on steering column causes the governor to maintain any desired minimum motor speed, while a foot accelerator cuts out the governor to any desired extent, increasing the motor speed to the maximum, without deranging the minimum speed adjustment to which the motor returns when the pedal is released. Lubrication is by a gravity sight feed oiler on dash.

The frame is of ash 1 1-2 by 2 1-2 inches, armored with a tapered 3-16 inch steel girder 4 inches deep at the center. An angle steel subframe carries the motor and transmission.

The body of the exhibited car was an aluminum modified King of the Belgians, made by the Springfield Metal Body Company, seating five persons. It was finished in dark green with red frame and running gear. The price of the complete vehicle is $4,000; of the chassis alone, $3,400.

The valves, which are mechanically operated, are on opposite sides of the cylinders, the spark plugs being situated over the inlet where they are swept by the incoming charge and kept free from oil. The crankcase is made of aluminum alloy and has three intermediate bearings besides the two end ones, all bushed with manganese bronze. The bearings are oiled by the splash system and each crank has an independent chamber so that each obtains its proper share of oil whether the engine stands level or inclined.

The transmission is by planetary gearing three speeds forward and reverse, the direct drive being on the high speed. The clutch is of the centrifugal type peculiar to this car.

Covert Vehicles.—New features of the Covert light runabout this year are a cellular cooler, a large motor of 6 1-2 hp., wheelbase increased from 68 to 72 inches, a larger and more comfortable body and a box on the rear. The chainless direct drive is retained, together with the air-cooled cylinder with water-cooled head, which has been a feature of this car for the past three years.

There are two speeds forward and reverse. There are two brakes, one acting on the rear axle and the other on the cone clutch. The steering wheel slides forward to give additional room to enter the car. The wheelbase is 72 inches, and the gauge 48 inches. The weight is 750 pounds and the price $750.

Charles E. Miller.—The well-known jobber and manufacturers' agent, exhibited a bewildering array of automobile supplies and sundries, including lamps, horns, goggles and masks, clothing, lubricants, dash clocks and ammeters, etc. A novelty to which special attention was called was the Carpenter Dust Deflector, a device which may be quickly attached to the back of the tonneau of a car and as quickly detached, when it folds into a very small bundle not much larger than a fishing rod when unjointed. Four metal sockets are fastened in pairs on each side of the door of the tonneau, two metal rods bent near their middles at an angle of 45 degrees are then inserted in the sockets and held by set screws. The deflector, of heavy canvas, is then stretched on the two iron rods and a wooden cross rod and its lower corners are secured by cords to the baskets or any suitable projections on the sides of the body. When not desired, all parts except the clamps are removed and stowed in the carrying baskets. There is no part over three feet in length.

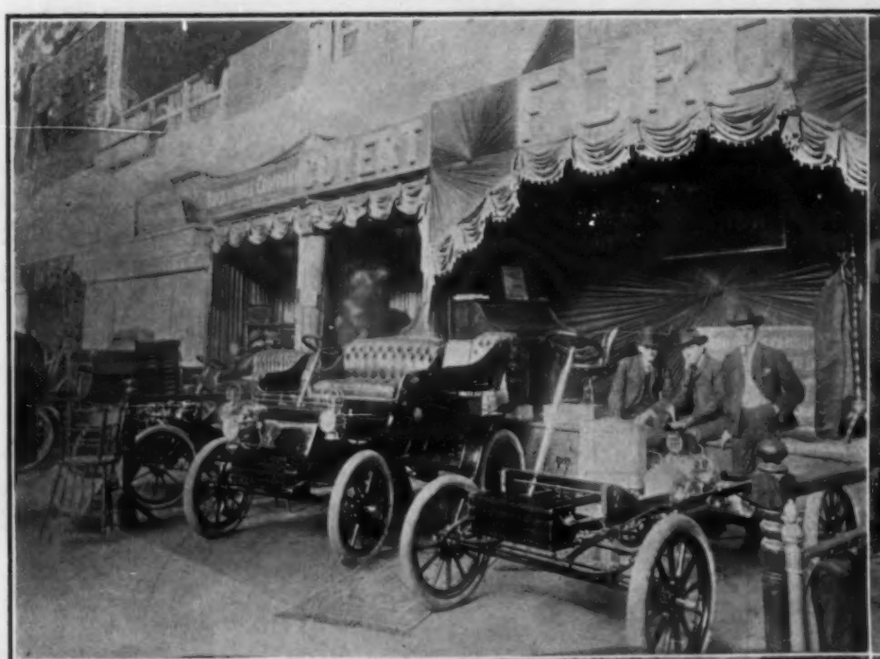
Ford Motor Company.—The Ford two-cylinder car was shown by its makers on the arena platform and also by John Wanamaker, the local representative, in the basement. There was no change of importance from the first model marketed last summer.

English & Mersick Co.—The English & Mersick Co. of New Haven, Conn., exhibited a very handsome line of automobile hardware and fittings, principally in brass. A device for swinging the front light of a standing canopy top so as to clear both the steering wheel and the heads of the occupants as well, was shown and demonstrated in a full size model top.

Goodyear Tire and Rubber Company.—A feature of this exhibit was the new flat tread corrugated single-tube tire recently brought out by this company. Clincher and solid types also were exhibited.

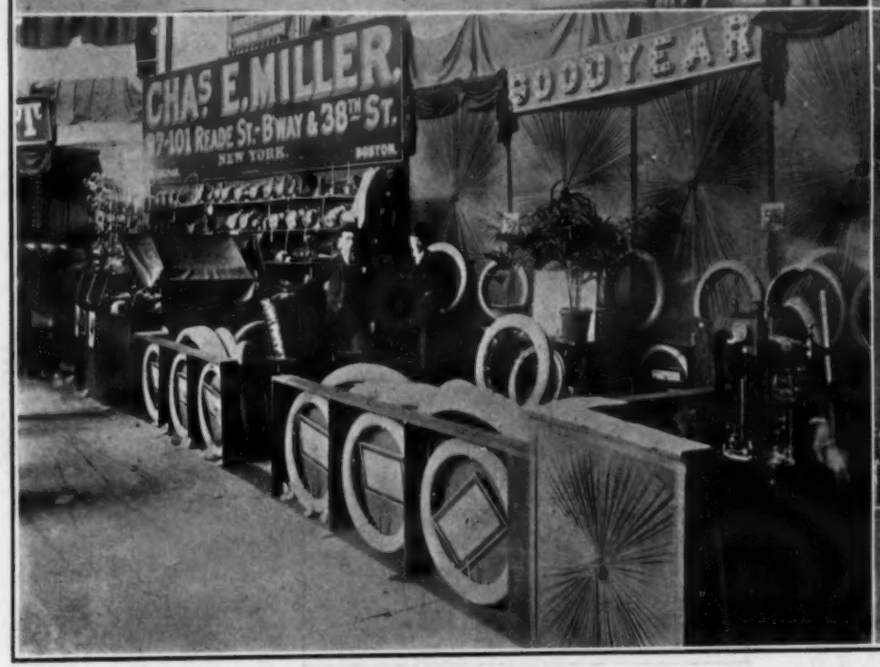
Fisk Rubber Company.—This firm exhibited both single tube and detachable tires of various sizes and also the Fisk steam vulcanizer, which vulcanizes tires from one to four inches by indirect heat and is in general use by the trade.

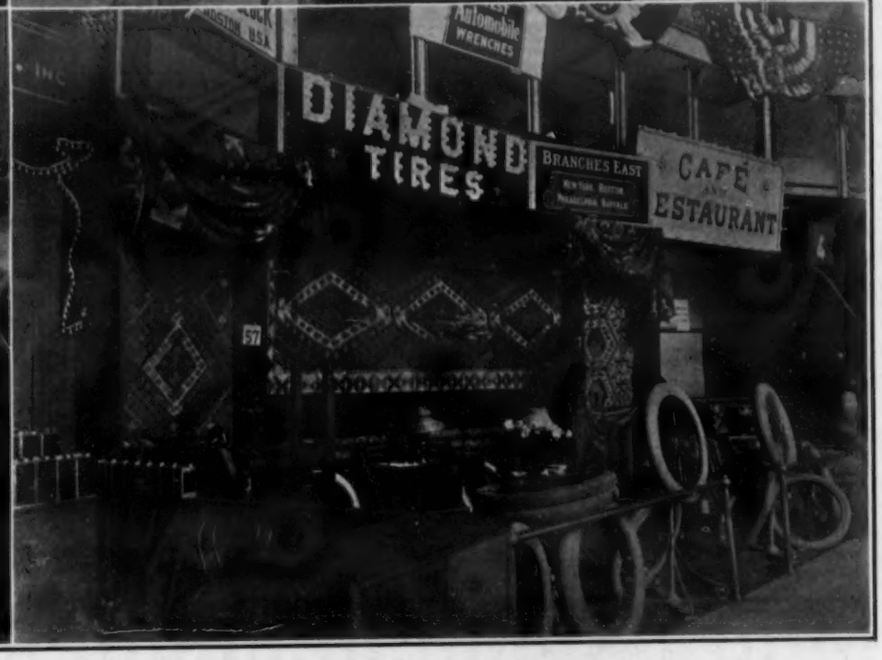
Hartford Rubber Works Company.—At the stand of the Hartford Rubber Works Company a large variety of rubber goods were exhibited, including the new Hartford clincher, made under the G & J patents and the new Dunlop detachable tire, which is removable "like slipping a belt off a pulley—a loose one at that." In this tire the cover is held to the rim by two tubular elliptical side flanges which



FORD AND COVERT LIGHT CARS.
GOODYEAR TIRES AND C. E. MILLER'S SUNDRIES.

THE AUTOCAR DISPLAY ON MAIN FLOOR.
DIAMOND RUBBER CO.'S RUG DECORATED BOOTH.



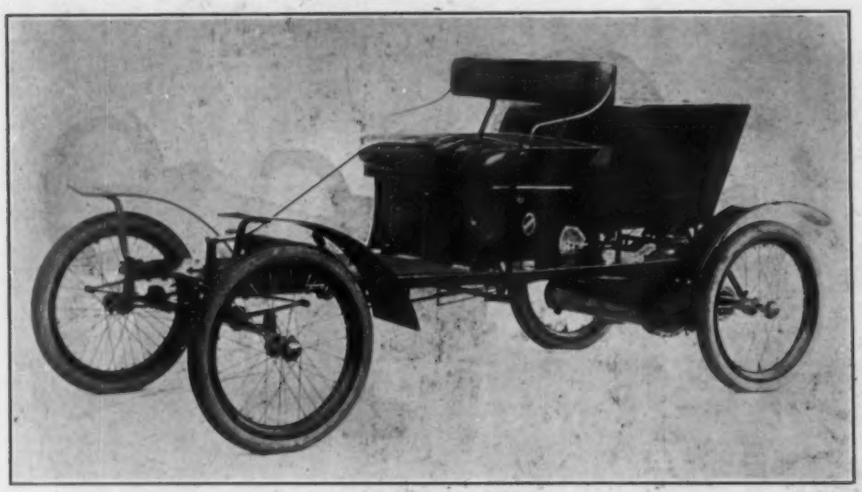


are rendered removable by means of turnbuckles provided with right and left threads. The rim is slightly concaved at the tire seat to form a cup for the inner tube and also has two grooves in which the flanges fit. The removal of either flange allows the entire outer cover to be slipped off and the inner tube removed.

The Turner solid tires were also shown with both plain and armored treads, one big 54 x 5 inch attracting considerable attention. Rubber cloth, mats, bumpers, tubing, packing and boot heels were also shown.

Buffalo Electric Carriage Company.—Two of the well-known Buffalo electric stanhopes were shown by the Buffalo Electric Carriage Company of Buffalo, N. Y. Except for a difference in the color of the running gear the two vehicles were identical, having a 2 1-2-horsepower motor on the rear axle, capable of generating 10 horsepower for a period of five minutes if desired, and a battery of 40 cells and 80 volts, giving a radius of 50 miles on one charge over fairly level street. There are six forward speeds and four backward, the highest speed being 17 miles per hour. The price is $1,650.

The Firestone Solid Rubber Tire.—The Firestone side wire tire made by the Firestone Tire and Rubber Company of Akron, Ohio, differs from the ordinary solid rubber tire in having steel cross bars inserted laterally near the inner edge at regular intervals. The tire is then vulcanized to the proper density to carry the weight for which it is intended. In applying the tire to the rim, two cold drawn steel wire hooks are sprung around the edge of the tire, resting against the steel cross wires in the rubber and holding the tire with an even compression.



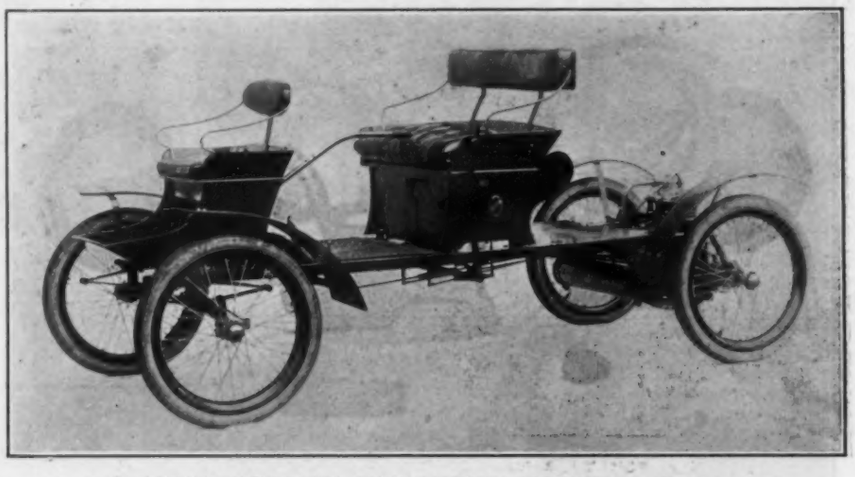
ORIENT BUCKBOARD WITH PACKAGE DELIVERY BOX ATTACHED.

The Waltham Manufacturing Company.—While the general appearance of the 1904 Orient Buckboard is similar to its prototype of 1903, a number of improvements have been made which add greatly to the efficiency of the vehicle and the comfort of the passengers. The most important change is the addition of a two speed which not only gives the car additional power for hill climbing, but enables it to run much slower in crowded city streets. Also by laminating the large gear with fiber and equipping the machine with a better muffler the objectionable noise of last year's machine is eliminated. The motor remains the same, a single cylinder air-cooled of 4 horsepower.

The body has been raised two inches higher from the ground and is supported by springs, elliptical in front and spiral in the rear. The hickory reaches are retained but are made much heavier. A spring cushion has been added to the seat back as well as a better seat cushion, and the seat is made wide enough to comfortably accommodate two persons. The strap starting device has been discarded and the motor is started by a crank in the usual manner.

Beside the regular model, two other machines were shown, one fitted with a delivery box bolted to the rear platform and the other with an additional single seat attached to the front platform. The price of the Buckboard is $425, the delivery box is $18 additional and the front seat $25 additional.

Stevens Arms and Tool Company.—A new feature of the 1904 Stevens-Duryea carriage is a powerful emergency brake, operated by a lever on the left side of the seat and acting upon the rear hubs. Some other slight improvements suggested by



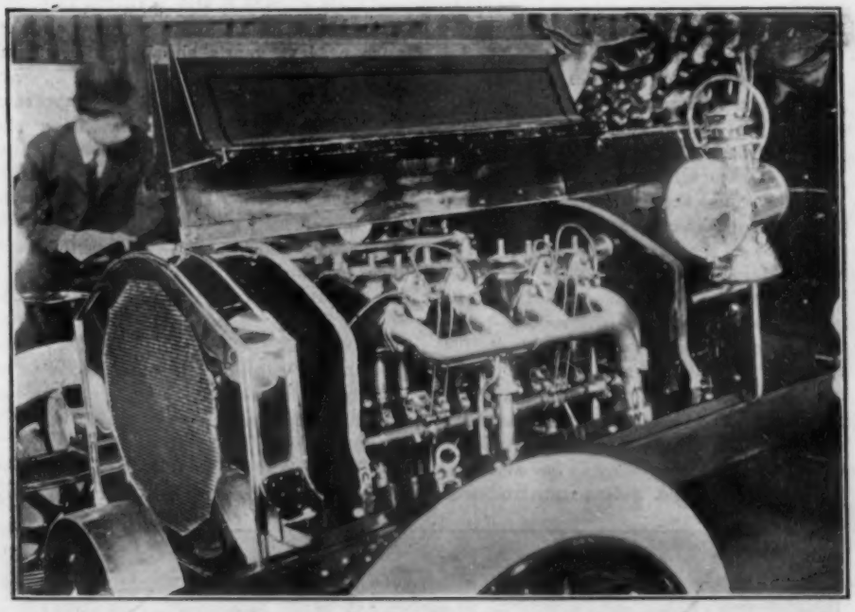
ORIENT BUCKBOARD WITH FRONT SEAT FOR A CHILD.

experience have been added, but in all other respects the very successful vehicle of last year is unchanged, its salient features of construction including the motor start from the seat by means of a short crank attached to the steering post. The four-cycle 7-horsepower water-cooled motor with two horizontal opposed 4 3-4x 4 1-2 inch cylinders, water circulation by means of a rotary valveless pump positively driven from the motor shaft, sight-feed multiple oiler, jump spark ignition with circuit breakers enclosed in crankcase and running in oil, motor control by both throttling and ignition, individual clutch transmission, all gears being constantly in mesh, giving three speeds forward and reverse, pillar steering, tubular running gear, etc. Only one model is made, a stanhope with folding top, and two of these were exhibited, one complete and the other with the body removed to expose the working parts. The chassis of the Stevens-Duryea racer which made world's records in its class for 1 kilometer, 1 mile, and 5 miles, at Ormond a few weeks ago and also won in its class in the Eagle Rock hill-climbing contest on Thanksgiving Day, was also shown. It is of 14-horsepower, having two regular double motors, but otherwise follows regular construction.

Standard Construction Company.—The most radical departure from conventional construction seen at the show was shown in the 25-horsepower Standard tourist car shown by the Standard Construction Company of Jersey City, successors to the U. S. Long Distance Automobile Company. The four-cylinder vertical motor of this

car is constructed without a crankcase, the whole engine and transmission being enclosed in a sheet metal dustproof case, the upper portion of which forms a hood of the usual type, except for being impervious to dust or water. Upon raising this hood, all the working parts of the engine are in sight and all adjustments and cleaning can be comfortably done from above, no pit being required. The engine has four vertical cylinders, 4x5 inches each, developing 25 horsepower at 1,300 revolutions. The cylinders are cast in parts and bolted together, having a continuous water jacket surrounding both cylinders. The valves are mechanically operated and are located on the left side. There is a single cam shaft and spiral gears. The ignition is by magneto and make and break spark. The transmission is of the standard sliding gear type, giving three speeds forward and reverse. The clutch is conical, leather faced. The radiator is of the full honeycomb type with hexagonal tubes and is surrounded by the water tank which has a capacity of four gallons. There is a fan driven by a spiral spring belt from the engine shaft, which, as it neither slips or breaks, obviates the disadvantages of the ordinary belt drive. The carbureter is a new design, of the variable bushing type, and is controlled by a centrifugal governor actuating a piston valve on the feed pipe.

The motor control is regulated by the governor and a foot button accelerator. The governor is set for the most advantageous working speed on the high gear. When the clutch is released the motor slows down automatically. The spark is fixed under ordinary circumstances but may be altered by a lever on the dash. There is also a compression release lever which allows the motor to be started under very light compression. The steering column is free from levers and carries only a short circuit button on the steering wheel in addition to the wheel itself. There are two pedals, the left operating the clutch and the right the brake on the differential. The change speed and hub band brake levers are in the usual position on the right side of the car.

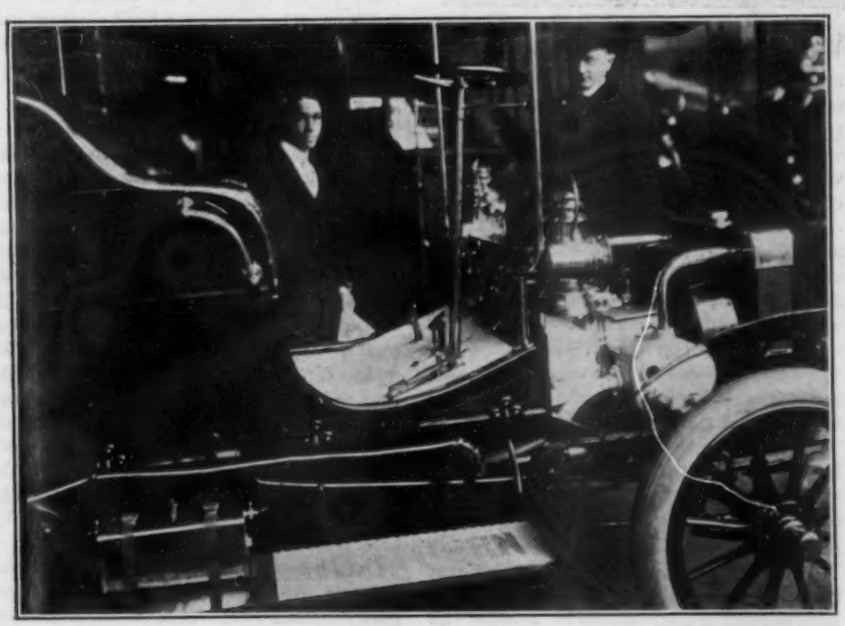


STANDARD ENGINE IN AIRTIGHT HOOD. NO CRANKCASE USED.

The mechanical oiler on the dash has a system of rocker cups actuated by a worm-gear.

The frame is of pressed steel 3-16 inch thick, tapered from the middle to the ends, which curve down to receive the spring ends, the rear joints having reversible shackles. The springs are extra long, 40 inches front and 42 inches rear. There is a solid front axle and a live rear. The wheels are wooden, 34 inches in diameter, fitted with 4-inch tires. The body is of wood, of the full King of the Belgians shape, finished in black with brass mountings.

The 110-horsepower six cylinder reversible marine engine built by this company and used in the fast motor boat *Standard* during the past season was also shown in this space and attracted much atention. Compressed air from a compressor under the floor was used to demonstrate the working of this engine and the motor used to drive the compressor was also used to turn over the automobile engine, the rear wheels of the car being raised from the floor by jacks under the rear axle. Several trophies won by the *Standard* were also shown.

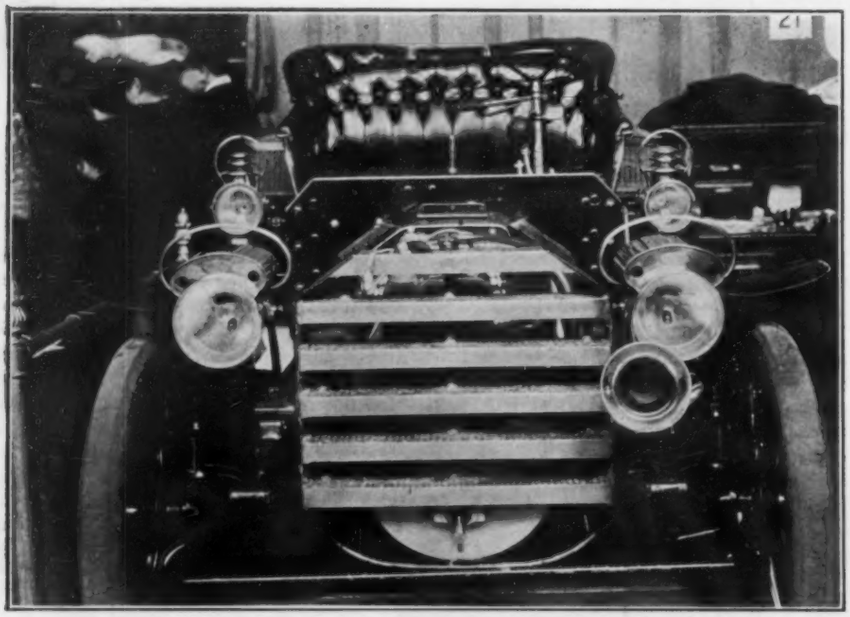


NORTHERN TONNEAU, SHOWING HORIZONTAL TRANSVERSE ENGINE IN FRONT.

Northern Manufacturing Company—A remarkable simplicity of arrangement of the controlling devices characterizes the new two cylinder 15-horsepower Northern touring car. There is an entire absence of levers on the side of the car and but one on the steering column and by tipping the latter forward, an unobstructed entrance to the car is obtained. Much of the simplicity of control is due to the Northern automatic timing device, a combination of commutator, automatic spark advance, safety device and spark gap. The entire device is combined in a small glass-covered case over the engine and is operated by an automatic governor, no spark lever being required. The opening of the throttle speeds the engine and as the engine gains speed the timing device automatically advances the spark to the proper point. No back kick from the engine is possible in starting because as the engine slows down in stopping, the automatic governor retards the spark to a point where the ignition must occur after the piston has passed the dead center. The gasoline throttle is actuated by a foot

lever which may be locked at any point when speeding along a level road and is released by a tap of the toe. The change gear lever is situated on the steering column just below the steering wheel.

The reverse gear is operated by a lever worked by the left foot and automatically releases when the pressure is removed. Another foot lever controls a self-locking hub brake, the emergency brake being operated in connection with the reverse. A unique constructive feature in this connection is the fact that the reverse pedal, brake pedal, steering gear, steering column lock and the steering arm are carried on a tubular shaft crossing the frame under the footboard. The engine has two horizontal opposed cylinders continuous with the transmission. This might be styled a planetary type, but differs from the ordinary form by having no internally cut gears. Other features are, bevel gear shaft drive, automatic adjustments on steering gear, fan-shaped spokes in the flywheel, engine valves mechanically operated, cylinder pet cocks and spark plugs can be reached without removing the hood. The wheelbase is 84 inches and the tread 56 inches. The weight is 1,500 pounds and the price $1,500.



NEW DESIGN RADIATOR ON 1904 DESBERON CARS.

The single cylinder 6 1-2 horsepower "sturdy" Northern runabout was also shown. The 1904 model is similar to that of last year as a whole, but has some improvements, among which is the placing of the muffler below the body instead of in it. In the space formerly occupied by the muffler a large water tank has been placed, which affords a running capacity of from three hundred to five hundred miles without refilling. The weight is 1,100 pounds and the price is $750.

The Buckmobile.—This easy-riding little car, made by the Buckmobile Company, Utica, N. Y., which made its first appearance at last year's show, has been improved and considerably altered in appearance this season by a number of important changes. Chief of these has been the placing of the radiator vertically in front, instead of under the body where it was hung last year and the addition of a hood and dash which gives the machine a very high class and up-to-date appearance. The water and the gasoline tanks have been removed from under the seat, the former being placed under the hood and the latter in the back of the seat. The horsepower has been increased from 10 to 16, the springs increased to two inches in width, the seat widened and the back made higher.

The construction in general follows the well known buckboard pattern, both body and mechanism being supported on six inch wooden buckboards reinforced by two inch side springs. The motor has two vertical cylinders, 4 9-16 x 5 inches, water-cooled with splash lubrication, mechanically operated valves, geared pump on flexible shaft, Herz timer, jump spark and aluminum crankcase. The transmission is of the planetary type with two speeds forward and reverse, governed by expanding clutches enclosed in an aluminum case and connected to engine shaft by a claw clutch which overcomes any binding which might otherwise be caused by the spring of the frame. The motor is controlled from the steering post, the high and low speeds by a lever at the right side of the seat, the reverse by the right foot pedal and the brake by the left foot pedal.

The body consists of a wooden platform carrying the seat, dash and hood. The rear portion is surrounded by a brass rail which gives an ornamental effect and provides a carrying place for luggage. The seat is 37 inches wide, upholstered in leather. The finish is either in natural wood or painted, The car weighs 1,400 pounds, has a speed up to 30 miles an hour and the price is $1,200.

Desberon Company.—Two touring cars were shown, one of 12–14 horsepower and one of 30–36 horsepower, the latter being entirely new this year. A striking feature of both was the radiator, which was composed of six wide transverse grills placed horizontally across the front of the hood and connected by three vertical tubes, no fan being used. The steering post is used only for steering, the clutch being operated by a foot pedal on the left, the emergency brake by a pedal on the right, and the hub brake and change gear by levers on the side of the car. The higher powered car has a four cylinder engine built in Paris, sliding transmission, four speeds forward and reverse, chain drive to both rear wheels, ignition by magneto hammer spark with two plugs in each cylinder. The wheelbase is 90 inches and the tread 54 inches.

The lower powered car has three speeds forward and reverse, with change-speed lever under steering wheel or side lever as desired. The wheelbase is 78 inches and the tread 54 inches.

Holley Motor Company.—Improvements in the Holley light touring car for 1904 are as follows: increased power of motor, larger carbureter of the Longuemere type, new type intake valve, universal joint between engine shaft and change speed gear, more rigid construction of the steel frame, the inner and outer side members being tied in four places on each side, steel tie rods on each side of angle frame with turnbuckles forming semi-trusses, longer body hangers in both front and rear, 36 inch springs all around, a high finish on all brass parts, a hood support, etc. The wheelbase is 60 inches and the gauge 48 inches. The weight is 850 pounds, and the price $650.

The Crest Manufacturing Company.—Four vehicles, all equipped with air-cooled motors, were shown by the Crest Manufacturing Company of Cambridge, Mass., all showing important changes in construction from the models of last year and one of which, a four-passenger surrey, was entirely new. This latter vehicle had a 15-horsepower motor with two opposed cylinders placed transversely under a front hood, direct shaft drive from motor to rear axle, planetary transmission running in oil and giving two speeds forward and reverse. The two speeds are controlled by a lever on the steering column and the reverse is operated by a foot pedal. The throttle and the spark are operated by levers on the steering column. There is a ratchet foot brake acting on the differential and the reverse also acts on an emergency brake. The frame is of angle iron and rests on semi-elliptical suspension

springs. The motor is supported by the Crest special spring suspension frame, as is the case in all the cars built by this firm. Midgley tubular steel 30-inch wheels are used with 3-inch tires. The wheelbase is 82 inches and the tread 54 inches. The price is $1,250.

The light touring car with tonneau body shows several improvements. The single cylinder motor has been increased from 5 1-2 to 8 horsepower, the wheelbase has been lengthened to 76 inches and the tread has been made standard. Wheel steering has been substituted for the side-bar steer of last year, and a fan to cool the motor has been added. The control is the same as in the surrey. The price is $850.

The same car was also shown fitted with a delivery wagon body with doors in the back and the side-bar steer. On account of the absence of a water tank, the body space is unusually large, being two cubic yards. The price is $900.

The Crest light two-passenger runabout shown last year has been improved by increasing the horsepower from 3 1-2 to 5 1-2, and placing the engine under a hood instead of in front of the forward axle. The chain drive is retained but is considerably shortened by the change in the location of the motor. A reverse has been added to the two speeds and wooden wheels substituted for the wire wheels used last year. The price has been raised from $550 to $650.

American Motor Company shows two of the Marsh motorcycles which are unchanged from last year's models, save in the refinement of details and the addition of mud-guards and an option of detachable or single tube tires.

Alexander Fischer.—This importer of foreign cars shows a Rochet-Schneider touring car.

Cleveland in Force at the Show.

CLEVELAND, Jan. 18.—There was a remarkable exodus of automobile people from Cleveland the latter part of last week when several hundred manufacturers, jobbers, dealers and enthusiasts left for the New York show. Railroad people say the show has attracted more attention and caused more travel than almost any other event of the year; every east-bound train out of Cleveland was made up with one to three extra coaches. Thirteen Cleveland concerns are exhibiting at Madison Square Garden. Nearly all of the dealers sent representatives and it is probable that they will come back with a number of new agencies, for several decline to fully close for their lines until they have seen everything at the show.

H. D. Ryus, who has been manager of the White garage in San Francisco, now has charge of the White garage in Los Angeles, which has a floor space of 120 feet front by 165 feet depth.

Convenience in Operation.

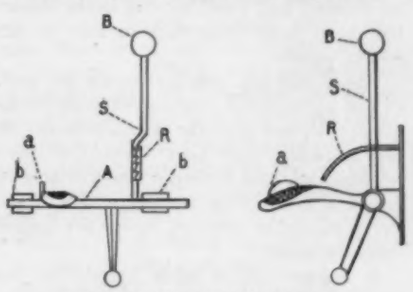
BY RENE M. PETARD.

The general idea, coming to one's mind after a thorough examination of the products shown in the present New York Show, is that of a wonderful improvement in the standard of American manufacture. This improvement is shown in all the parts of the car, as well as in the most important mechanical features as in the details of construction which make the use of the car easier, and increase its comfort.

As a rule this year's leading cars, chiefly the ones closer to the French types, are of greater apparent complication than last year's, and it is not seldom that one hears visitors remark that one must be an expert to drive such and such a car. It will be found, however, by a close examination of the features of the machines shown, that the manufacturers have endeavored to make the handling of their cars easier than heretofore, and that their efforts have not been vain. Although the parts are sometimes more complicated, every element has a well-defined work to accomplish, and the design is such that the work will be accomplished with as great a certainty as one is allowed to expect from any mechanical apparatus.

I will endeavor in the present article to bring to my readers' attention some of the minor details, seldom noticed by the buyer, but which the user always appreciates or misses, according to the cars, when he has acquired a better knowledge of his car.

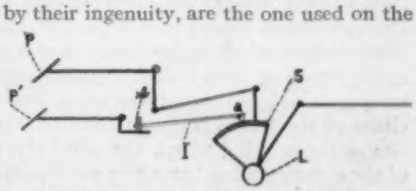
I will first consider the disposition of the two most important levers found on all the standard types of machines: the accelerator on the throttle and the spark advancing lever; I evidently leave out the larger levers: brakes and change-speeds, to which I will come back later. The throttle is generally operated either by a pedal or a



PEERLESS PEDAL MECHANISM.

hand lever, the spark is timed in all the types of cars by a hand lever, showing incidentally that with the new throttle constructions the ignition timing is not meant to be changed as often as it used to be, as it has given to the throttle its place as engine controller, and is only to be used to get the maximum of efficiency from the motor when the speed of same is changed by the accellerator. On the contrary, the fact that in most cases the throttle is pedal actuated, shows that, with the improved transmissions giving direct drive on the high speed, the throttle is to be used continually to obtain the necessary speed variations, and must be of as convenient a handling as ever possible. To make the use of the accelerator easier and to save the driver the tiresome obligation of keeping a constant pressure on the pedal when a long stretch of speed is to be had, the manufacturers have brought out very cleverly designed systems of ratchet treadles.

The two most noticeable of these devices by their ingenuity, are the one used on the



THOMAS ACCELERATOR PEDAL LOCK.

Peerless four-cylinder car and the one used on the new Thomas three-cylinder machine.

The Peerless accelerator pedal carries on the left side a vertical appendix *a* against which the inner side of the driver's sole is supposed to bear. The treadle is made fast with a short shaft *A* capable of a slight sidewards motion in two bearings which for the convenience of the explanation we place in *b* and *b*. The shaft *A* carries also a vertical stem *S* of about 10 inches at the end of which is a wooden ball *B*. At rest the pedal is locked in any desired position by a spring pushing the stem *S* into notches cut on the side of the segment *RR*. When the position is to be changed, the foot is slightly turned toward the left against *a*, thus releasing *S* from *R*. The sidewards pressure being released, the pedal will again be locked under the action of the spring. I will call the reader's attention to a minor detail of great utility; it is the presence of the ball *B* which allows to place the throttle in any desired position when outside of the car, without having to grasp the generally cold and dirty pedal; this will be appreciated chiefly when starting the engine.

To describe the Thomas pedal, I refer the reader to the most unrealistic sketch herewith. The accelerator pedal proper *P* actuates, through suitable levers and rods, the throttle. The locking is obtained by means of a bell-crank lever and axle *L* carrying a toothed sector *S*. A lever *l* pivoted in *a* locks automatically the said sector. To release *P* and change the position of the throttle a light pressure is brought upon the brake pedal *P'*, thus lifting the end of *l* through a regulating screw *s* and releasing the sector. It will be noticed that the use of both feet is required, unless one wants to let the throttle close as far as the regulator will allow.

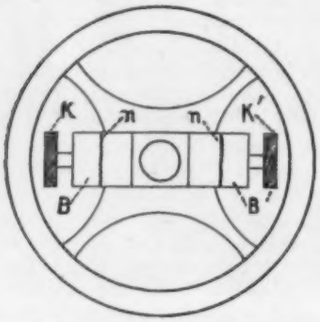
Simpler devices are to be found on the Cadillac automobile and in a treadle sold separate by the Turner Brass Works. In

L. of C.

most of the other cars when the throttle is operated by a hand lever, this lever moves on a segment carrying notches and is locked in the usual way. What could be said of this disposition also applies to the spark advancing lever. There are, however, a few dispositions of this system of hand lever worthy of attention, which I will briefly mention.

In the Columbia car we find a device also used abroad and which is well worth noticing, as it allows the command of both spark and throttle without taking the hands off the wheel. The steering wheel carries diametrally two knobs K and K close to its rim; these knobs each carry one-half of two cylindrical brass pieces B and B, the other half of which is fixed and carries a spring bringing both halves together and locking them by means of notches n; when either of the knobs is drawn towards the rim of the steering wheel, the two halves of the corresponding brass box are disconnected and the knob can be turned to any extent until the effort is stopped, when the spring brings both parts in locked position again. The motion of the knobs is transmitted to the different parts of the machinery by flexible metallic cables running through the tubular steering post.

In the Pope-Toledo cars the throttle and spark lever are both pivoted on the same

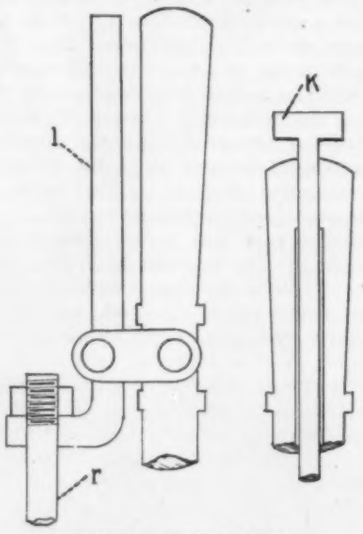


COLUMBIA OPERATING KNOBS.

center as the steering wheel and are carried on notched segments. It is to be noticed that although the two levers can be used separately, when the throttle lever is moved, the spark lever moves with it, thus advancing the spark in proportion to the throttle opening, unless the driver does not wish such action. In the Rainier car of the Berg Automobile Company, the spark timing lever is under the rim of the steering wheel and close enough to the latter to allow of its operating without removing the hand from the wheel. The accelerator is of the ordinary pedal system without ratchet.

There are evidently many other cars in which the levers referred to above are very cleverly disposed in handy situations, but I only mentioned a few typical dispositions picked among the best.

A point in brake and change speed lever construction which I wish to bring out is the suppression in a few cars of the auxiliary handle and rod l and r, generally used to lock the lever in position and its replacement by a thumb knob K commanding a rod running through the lever itself and actuated by simple pressure of the thumb. Such a device has the advan-



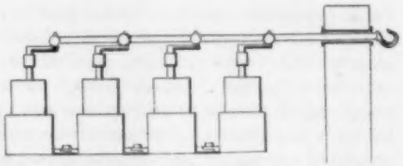
IMPROVED LEVER RELEASE.

tage of leaving to the handle of the lever a more favorable shape for comfortable seizing and allows a better utilization of the effort.

Improvements have also been made in the design of the sprag operating devices, or in the sprag design itself. In the Pope-Toledo car, the car of many good features, upon which we will come back further from a different point of view, the old chain or rope and hook system of holding the sprag up has been replaced by a neat press knob running on a brass guide well out the way, although very handy. In the new Thomas three-cylinder car we find a new device of sprag which was considered as one of the most remarkable features of one of the leading French cars. This system of sprag by ratchet and pawl on the brake drums has been fully described in one of our recent issues.

The fitting of a muffler cut-out on most of the high-priced cars and on many runabouts, shows that the manufacturers do not consider their cars devoid of speed possibilities, and such devices will also be found a great help on steep hills, when every available ounce of power is required from the motor.

A feature which adds greatly to the comfort of the cars and which was to be



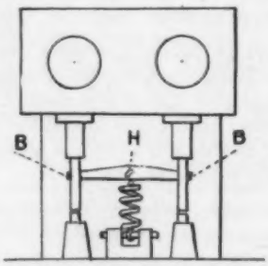
TOLEDO RELIEF COCK OPENER.

found on quite a good number of machines, is the tilting steering post, and if such a device is properly designed and does not impair the strength of the steering gear it is to be hoped that many more will be found hereafter, even on high-priced cars although it seems to have been heretofore a mere runabout feature, probably on account of the more limited space available. An apparently satisfactory solution of the problem is to be found on the new Oldsmobile runabout and on the Haynes-Apperson Car. In the same order of ideas the tilting steering wheel seems to be called to a good success, as it is simpler and probably stronger than the tilting post.

A minor detail which quite a few manufacturers seem to have learned from the Mercedes cars and which is not to be despised, as with a rather low seat it increases greatly the comfort of the driver, is the pedal to be pushed forward instead of downward. It was one of the very much discussed features of the Paris show and it seems to have won its cause.

As far as convenience in the situation of the mechanical parts of the machines is concerned, and after noting a great improvement in the line of accessibility, except on a few opposed horizontal cylinder motors, I will call the reader's attention to a few remarkable dispositions.

In the Packard four-cyclinder touring car a clever disposition of the very neat contact breaker and lubricating pump is to be noticed. These two parts are mounted on a vertical shaft, driven by bevel gears from the cam shaft. The con-



COLUMBIA EXHAUST VALVES.

tact breaker being situated on the extreme top of the shaft in an horizontal position, well at hand for inspection, and the oil pump being screwed on to the rear cylinder and equally accessible. The easy access to the float chamber of the carbureter of this car is also to be noticed, two thumbscrews to be taken off allowing a thorough visit and cleaning of same.

In the Pierce car the contact breaker is in front outside of the hood and can be opened most easily without touching any other part of the car.

Among other interesting mechanical features adding to the convenience of the user, I noticed in the Pope-Toledo car the disposition of the compression relief cocks, the handles of which are connected by a rod coming through the radiator and carrying a hook or catch through which the cocks can be operated from the outside without touching the hood. A similar disposition, but on the oiling apparatus, is to be found on the Matheson car in which every one of a good many distinct oiling cocks is automatically cut off by

the engine when it is brought to a stop, thus avoiding the loss of oil through carelessness in stopping the flows.

A simplification worth noticing, which also allows easier removal of the exhaust valve is the Columbia car's exhaust spring disposition. The exhaust valves of two neighboring cylinders carry between them a beam *BB* made of flat sheet metal of heavy gauge. A hole *H* is bored in the center of *B* and through it passes the loop end of an extension coil spring, the other end of which is fastened to the crankcase. This device is much simpler than the usual device and allows quick removal of the valves. In this same car we also find the compression relief cocks connected like in the Pope, but the rod is actuated from the seat through the dash-board instead of from the front.

More care of the user's comfort has also been shown by the manufacturers in determining the situation of the tanks and of the oilers. I must also mention as an improvement in the general design of the cars, the folding hoods, split longitudinally, in use on most cars.

It will be seen by the above, which is only an exposition of a few of the best features of the cars, in the line of increased ease of operation, that, as I said at the beginning, an immense progress has been made, and that the most complicated mechanisms can be taken care of, just as easily and comfortably as it is possible to wish. It is to be hoped that the efforts made by the manufacturers in adding comfort and convenience in management to their cars, after having given them reliability, will be appreciated by the public, and will help to the success of the automobile among the non-initiated classes who still consider it as the expert's playing tool, and only think of it as of an intricate and unmanageable machine far out of their reach.

EXHIBITION HALL DISPLAYS.

Buffum Touring Car.—The Buffum cars are now shown for the first time in New York. The 1903 model was shown in Boston last spring.

The Buffum exhibit comprises one Buffum 1903 touring car with canopy, the 1904 model touring car, and an aluminum tonneau body, made principally by Mr. Buffum's own hands, with no tools save a hammer and a block of wood, which may, perhaps, be ranked as the most skilful piece of workmanship shown in the Garden, as it is a simply wonderful example of shaping by the eye and hand, the lower part having straight outlines, flared as it rises from the floor, and the seats and upper parts being swelled and curved in extremely graceful and harmonious shapes, to give abundant room and the utmost possible strength of structure with the thin sheets employed, the mouldings at the top edges being raised and turned with the hammer, and reinforced with top flanges riveted on with copper rivets. The price of such a body is $500, and its weight, made 14 Birmingham gauge plate up to seats, and 16 gauge above is 120 pounds, being only about half the weight of the aluminum body, also made by Mr. Buffum, but an earlier design, shown on the 1904 Buffum car.

The 1903 car has four cylinders 3 3-4 x 4 3-8 inches, water cooled, dry battery and jump spark ignition. The type of motor is two pairs of horizontal opposed motors, two cranks, each taking the rods, two opposite cylinders, with the flywheel between the two cranks set at 180 degrees, the driving chain sprocket carried on one flywheel hub. The transmission is three speeds forward and a reverse, all by chains, including the reverse, for which a shifting gear is also used, all the gear changes being controlled by one lever having five positions in two different planes, not to be described without drawings, very intricate in action, though simple in construction. The wheelbase is 94 inches, gauge 54 inches, wheels all 32 inches, with 3 1-2 inches Goodrich tires, weight 1,850 pounds; 1903 price $2,500. Plain bearings, bronze bushings, crank and hinge pin, "wipe" lubrication.

The Buffum 1904 model is one of the finest pieces of car construction ever shown in the Garden. All principal sliding surfaces, pistons and cylinders included, are ground and lapped. The four cylinders, cast iron, are 4 1-2 x 5 1-2 inches, nominally 28 horsepower, 1,200 r.p.m. are vertical on an aluminum crankcase, drop forged rods, bronze boxes, marine type, fine screw threads in machine parts, standard threads, well fitted, cotter pins not much used. The lubrication is by force plunger, and is needle valve regulated for the cylinders, and flooded for other places, with return pipes to the oil tank. The wheel axles, all stationary, are lubricated with a forced feed of heavy grease at the outer end of each wheel hub, screw-piston forced, hand operated.

The transmission is three speeds forward and reverse, sliding gear, with cross shaft and side chains to the rear wheels. The ignition by Holtzer-Cabot magneto and coil, make and break spark normally closed, quick separation and return; also, dry batteries, Splitdorf coil, with commutator, thus permitting the use of either jump or hammer spark. Same spark regulator operates both systems.

The Buffum chassis frame is built up of shaped steel side plates full length of sides, uniform thickness, about 1-8 inch, on each side of bent hickory filling, secured by through steel rivets, countersunk and finished flush on both sides. The springs are half elliptics, 44 inches long in rear and about 36 inches in front. The rear hub brake drums are 13 inches diameter, 1 1-2 inch face, and the brake bands work the same forward and back.

Similar smaller drum brakes are fitted to the sprocket shaft on both sides of the balance gear, and are pedal operated from the foot board for the ordinary brake action. The wheel hub emergency brakes are applied by a hand lever which uncouples the motor from the transmission when brakes are put on. Wheel base, 94 inches; gauge, 54 inches; wheels, 32 inches; 3 1-2-inch Goodrich tires; weight, 1,900 pounds; price, $4,000. The design and construction of the motor must be described as no less than admirable.

This car is the work of a mechanic of the class to which all makeshift is abhorrent, one who cannot by any possibility build work not agreeable to the trained eye, nor lacking in adaptability to its intended purpose.

The Mack Bros. Co. enjoy the distinction of showing the largest gasoline pleasure car at the show, the passenger capacity being seventeen, two seats being arranged across the car, with a double tonneau at the back. The driver is provided with an individual seat, on the same frame with the wide front seat, a novelty worthy of mention.

The length of the car, over all, is 18 feet 6 inches, with width of 6 feet. The wheel base is 13 feet, 6 inches, gauge 5 feet, 2 inches.

The frame is a built-up riveted steel frame with I section cross members, the four-cylinder engine being carried on a false frame of angle steel which also carries the sliding gear transmission. The drive is by cone-clutch with pedal control and accepted French type construction throughout.

The engine is 5 1-4 x 6 inches with mechanically actuated inlet valves, opening into the top of an explosion chamber; the exhaust valves being located directly below the inlets. Spark plugs are set between the inlet and exhaust.

The crankshaft is a fine piece of work, being cut out of a 5 x 4 3-8 nickel-steel ingot. All engine bearings are heavy phosphor bronze.

The Howard Automobile Company shows the two 24-horsepower cars which were mentioned in a recent issue of THE AUTOMOBILE. The carriage work of the two cars is luxurious, the closed car being provided with electric light, speaking tube to the driver and ample luggage space. The double tonneau is a wide, roomy car, with a staunch removable canopy top. The Howard engine is shown mounted on a stand, with lower crankcase removed.

French practice has been closely followed in the mechanism and outline of the Howard four-cylinder cars, and, as a re-

sult, the exhibit has attracted much attention.

Newbury and Dunham exhibit a number of marine motors ranging from 2-horsepower up to 20 and both two and four-cycle types, single, double and four cylinder.

A feature of the stand is a practical demonstration of the Western reversing propeller; a two-cycle marine engine of 2-horsepower being coupled up with the propeller which may be observed in motion in a glass covered tank of water.

Barton Boiler Company.—A Barton coiled water-tube steam generator connected up to a horizontally disposed Fox valveless engine and a Brunell burner and Barton condenser, all mounted on an iron frame for convenient display is shown. Tubing in the lower half of boiler has been increased to five-eighths of an inch, external diameter Side drafts with moving vanes, new rotary throttle valve, and needle fuel regulator have been added; and a thermostat taking the steam pressure from the steam pipe instead of from inside the boiler is a new feature.

The Brunell kerosene burner has a double barrel superheater, one barrel of which is automatically regulated by the thermostat and pressure valve independently of the other from which the pilot light takes its gas. A bronze grate is cast integral with the generator tubes and takes up and radiates the heat in such a way as to reduce carbonization. Each barrel of the generator has a removable gauze filter which can be withdrawn readily and cleaned. The regular needle valve and its tube can also be taken out easily for cleaning. The air for combustion is heated as it enters the burner.

Rochester Steam Motor Works.—A double cylinder Fox valveless steam engine is shown in operation, and also dissembled. This engine has double-acting pistons and single lever control and is instantaneously reversible.

Eisenhuth Horseless Vehicle Company.—This concern which has just begun new operations in the big Middletown, Conn., plant of the Keating Bicycle Company, has the most brilliant display in the basement. It shows one huge seven-passenger touring car called the Compound, from the fact that it is driven by a high and low pressure gasoline explosion motor—the only one of the kind offered by the market.

This imposing car is painted a rich red throughout, trimmed with black and upholstered in red leather. At either end it is flanked by a 4x8-foot oil painting on ground glass illuminated from behind by incandescent electric lights. One painting shows the Compound car in half-life size and the other a bird's-eye view of the Middletown factory.

The 60-hp. compound engine in this Graham-Fox-Eisenhuth car is one of the real novelties of the show, and will have more extended description in a future issue. It has two high-compression four-cycle cylinders that exhaust alternately into a third cylinder between the others, which utilizes the exhaust pressure of the burned gases. The car has other special features, such as change gear shift by means of a hand wheel just under the steering wheel on the steering post, and an expanding clutch of barrel shape having internal grooves of truncate cone cross section into which two semi-circular shoe segments are progressively expanded. This clutch is inside the crankcase and runs in oil. The pick-up is gradual so that no injury can result from suddenly throwing in the clutch.

Hollander & Tangeman, importers of F. I. A. T. cars, have a 16-20 car of the late 1903 type, this year's model being in transit. The new car will be shown at one of the later shows and will be described in THE AUTOMOBILE. The decorations of the F. I. A. T. stand are particularly attractive, and notwithstanding the location, in the basement of the building, the exhibit is made one of the most inviting in the Garden. A false ceiling has been built over the space, with a dome for an electric fixture, and the decorations are handsome fresco and stucco work. Electric lights are used with prodigality and good taste.

A. J. Myers is showing two Aries cars, a 16 and a 35 horsepower. The engine equipment is the famous Aster motor with either automatic or mechanical inlet valves. The frame is pressed steel with forged dumb-irons, with 44 inch rear springs. Direct drive on high speed is provided and four speeds and reverse. Carriage work is French throughout, and the cars are well proportioned and finished. The selling price of the cars will bring them in competition with American machines of a like type.

The C. H. Blomstrom Motor Company's car is fitted with a two-cylinder 10-horsepower horizontal opposed motor, planetary transmission and single lever control.

The car is made in two styles, a second model with one cylinder, rated at 8-horsepower. The cars are built on accepted American lines, wheel steering, with engine located under the seat and radiators placed in front. The finish is excellent and the appearance of the cars pleasing.

The J. H. Dawson Machinery Company has a single car on view, a 16-horsepower two-cylinder engine placed transversely in front. The engine is started with a crank from the front, bevel-geared to the engine shaft and in engagement only for starting. All other gears are spur type. The engine drives back to a two speed transmission, and thence by chain to the live rear axle.

The frame is made of angle steel, hot-riveted and stiffened with gusset plates. A novelty is found in the location of engine, gasoline and water tanks and radiator under the bonnet, the front of which is closed with a fine mesh wire screen. The body design is good and while reminiscent of the King of Belgian tonneau so popular this year, is enough different to stamp it with individuality.

The car is low-hung, bringing the center of gravity below the average and should make the steering steady and safe on greasy roads.

Phelps Motor Vehicle Company.—The single vehicle shown possesses radical departures in design, the engine and transmission being supported on the axles and the usual frame being eliminated. The front elliptic springs are separable at their ends, the upper halves being attached to the body and the lower halves to the axle, suitable cotter-pinned bolts being provided to admit of ease in taking down the springs. The rear springs are pivoted upon the rear axle and when it is desirable to inspect the driving mechanism or water circulating system the body may be lifted from the front, propped up with any available stick or piece of timber and the necessary repairs or adjustments made with great ease. The propeller shaft is housed with a casing of large diameter to give stiffness and permanent alignment to the drive from the engine back to the transmission, which is located at the differential on the rear axle. The engine is a three-cylinder, 4 1-2 x 4 1-2 inch vertical motor carried on a transverse spring over the front axle, which is cranked to give clearance. Ignition is by make and break

The water cooling is assisted by a forced circulation of air, drawn through the radiators by the fan-shaped spokes of the fly-wheel, which is placed in front of the engine on an extension of the crankshaft. The pump and carburetor are affixed to the crankcasing, making a compact power plant.

The Auto Import Company shows a handsomely finished 20-horsepower Rochet-Schneider, with roomy aluminum tonneau, by J. M. Quinby & Co. The car is practically unchanged from the standard model of last year, but the cars now in transit will be built with pressed-steel frame and cross members.

Rodgers & Co. have two cars driven by air-cooled motors, a system which seems to be growing in favor with American builders. The power plant possesses several features of novelty and merit. The engine is of the two-cylinder horizontal opposed type, located in front, transverse to the frame. The cylinders are cast with thin deep gills on the heads and valve chambers and the outside is turned off to take a large number of 24-gauge copper gills which are formed with small holes punched up from one side, largely increasing the available radiating surface, which equals 54 square feet per cylinder. The crankchamber is left open on the top, a copper oil tank standing directly over the crankshaft, with suitable provision to take care of lubricant thrown upward by the cranks.

The air cooling is assisted by a fan, keyed to an extension of the engine shaft. The speed change is sliding gear with direct drive on high speed to bevel-geared live axle through propeller shaft with cardan joints, fore and aft.

American Coil Company.—The novelty of this stand is a hydraulic transmission and differential. The usual propeller shaft is used to drive a four-cylinder rotary pump which delivers oil to two motors located in the differential case, one motor driving each wheel.

The pump is constructed with four cylinders which discharge the oil at a central point of the group, the cruciform disposition of the pump barrels admitting of a simple device to change the stroke. The pumps are carried in a cylindrical drum which is surrounded by a movable ring which has a transverse travel sufficient to change the point of supply from one side to the other or to any point intermediate. When the oil supply is equal, the pump delivers no power.

The full line of French style dash coils, spark plugs and electrical equipment for automobiles is shown, also several novelties for marine motor ignition.

Springfield Automobile Company.—A single "Bramwell" car is shown, of the runabout type, weighing 1,150 pounds, with complete equipment of tools and spares and with water, gasoline and oil tanks filled. A distinct novelty is found in a built-up laminated wood frame, reinforced with thin steel sheathing on the sides. The laminæ are cut out with the grain about 30 degrees from the horizontal and alternate strips are cemented with the grain running in opposite directions, so that when completed the frame is made up of an infinite number of true trusses.

The engine is carried on two steel girders extending from side to side. The engine is a single-cylinder 8-horsepower; has readily removable valves, equipped with a system of jump spark ignition in duplicate throughout, admitting of the use of either the one or the other.

The transmission is entirely new and consists of three concentric leather-faced cone clutches, each of which is driven at a different speed through spur gearing in such a manner that by throwing in one or the other of the clutches, either of the two forward speeds or the reverse may be obtained.

The clutches are of such large diameter, about 17 inches, that even if flooded with oil, perfect drive is secured with very slight contact pressure.

BRAMWELL 8-HP. RUNABOUT, WITH LAMINATED WOOD FRAME.

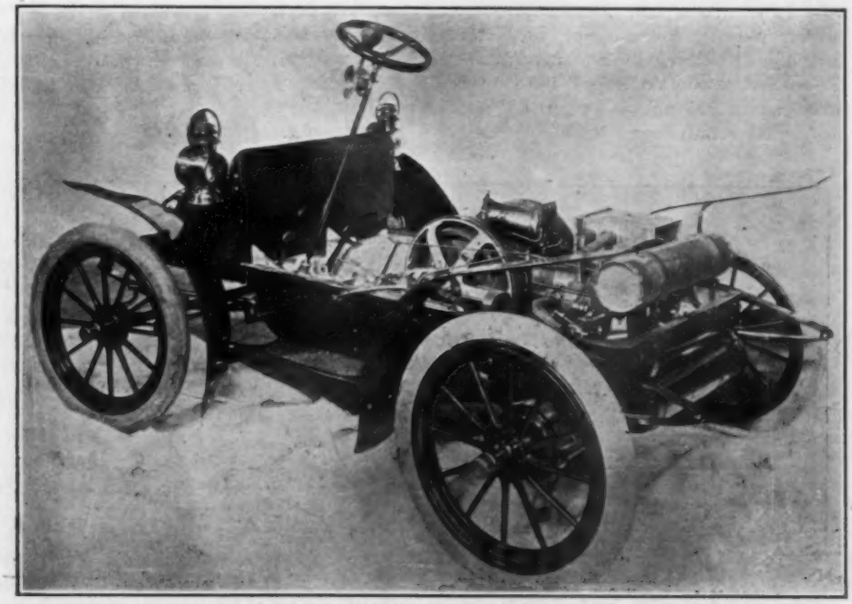
All bearings and gears throughout the transmission are of unusually large dimensions. The lubrication is by automatic pressure and is piped to all important bearings and so arranged that the oil supply is proportioned to the work being done by the engine.

The entire mechanism is protected by an aluminum and wood casing underneath the frame. The makers are fitting an oil-tight aluminum chain case, the first to be regularly used on an American machine. It will be detachable and will be so arranged that the chain will run in an oil bath.

New Dunlop tires are regularly fitted, Timken roller bearings throughout and Midgley tubular steel wheels.

Richmond Manufacturing Company.—Automobile lamps of simple and pleasing design are shown at this stand. The leading type has been called the "Quaker" and possesses novel points in design, the ventilating hood being shaped to guard against extinguishment of the light in a heavy head wind and to give, at the same time, a distinctive clear-cut appearance to the lamp. Mirror searchlight reflectors are fitted to all lamps of the independent generator type. A novelty is shown in the patented double gasketed generator, the inner gasket precisely fitting a standard two-pound carbide package, permitting the use of the can as a carbide chamber, about half the contents of the can being first removed to allow for expansion as the gas is generated.

Brennan Motor Company shows a number of the well-known two cylinder, horizontal, opposed Brennan engines and transmissions. A sample car is exhibited on the stand to demonstrate the most popular disposition of the company's product. The transmission is readily



BRAMWELL CHASSIS, SHOWING LARGE DIAMETER OF FRICTION CLUTCHES.

adaptable to chain or bevel gear drive and gives three speeds and reverse through sliding gears, high speed driving direct. Blue prints are shown of the company's two and four-cylinder vertical engines, which are furnished in various powers.

W. Irving Twombly has on view a large tonneau steam car with ample wheelbase and standard tread. The power plant is located under a large bonnet in front, the engine being a four-cylinder horizontal compound, single-acting, with high pressure cylinders on the right and low pressure on the left. The crankshaft occupies a position in the longitudinal axis of the car and drives back to the rear wheels by means of the usual propeller-shaft and differential. The engine indicates 12 horsepower when used as a compound, and may be instantly changed to 20 horsepower double simple for emergency on stiff grades. The boiler is a horizontal return fire tube, placed under the front seat, easily accessible by opening panels in the car body. It is supplemented by a 60-foot semi-flash coil, placed directly over the fire, through which coil the water passes on its way to the boiler.

All control levers are placed on the steering column with brake, which shuts off the power automatically. The car possesses many commendable and novel features which deserve more extended mention.

Fredonia Manufacturing Company shows a number of the well-known Fredonia cars in various style of bodies and finish. The only car on the stand which presents any radical departures from the company's practice, is a two-cylinder, vertical motor-in-front machine, in which the system of control is obtained in the same manner as in the single cylinder cars, namely, by advance spark and throttle on the inlet.

The product of the company was prominently brought before the public at the time of the recent New York-Pittsburg endurance run, when the cars entered made a notable showing.

Elwin L. Smith exhibits several fittings and sundries, the best known being the I. M. C. steering check, the Austin flexible-coupling pump, and a compact oil gun for the injection of liquid lubricants into the mechanism of automobiles.

The steering check is shown fitted to both wheel and tiller steering and may be found on several well known makes of cars in the Garden.

Relay Motor Car Company has on view two tonneau cars, engines, a transmission and rear axle. The cars are decidedly "French" in general outline and possess attractive mechanical points which deserve more mention than comes within the possibilities of a brief show article.

The engine has three vertical cylinders, 4 1-2 x 5 1-2 inches, and is placed in front with the usual combined flywheel and cone-clutch. The cylinders are brass-jacketed with valve action on the top of the heads, mechanically actuated inlets being fitted. The transmission, of the sliding gear type, gives three speeds forward and reverse with direct drive on third speed.

Timken Roller Bearing Axle Company.—A complete line of roller bearings for automobiles is shown, also wood-wheels, hubs, steering knuckles and rear axles. The steel hubs are of the accepted artillery type, stamped from cold-rolled steel, with ample stock for support of the spokes. The stampings are lined with a sleeve, turned from the solid bar which is brazed to the inner flange.

The Timken roller bearing, as is pretty thoroughly understood, is an adjustable bearing in which the end-thrust is taken care of by the tapered cone, tapered cup and tapered rollers. The rollers, cones and cups are made from machinery steel, case-hardened, and all bearings are ground. The bearing equipment is furnished in various sizes from seven-eighths inch for light runabouts to three inch for the heaviest autotrucks, carrying dead load of 27,000 pounds on the four axles.

The Graham Company.—Helical simple and compound springs for automobile use are shown in a variety of weights for cars ranging from a light runabout to heavy trucks. A desirable novelty shown is the Graham supplementary spirals, designed for attachment to the half elliptical springs usually found on heavy touring cars.

John Wanamaker.—The Ford two-cylinder cars are shown in runabout and tonneau models. No radical changes have been made in the mechanism or carriage work of these excellent machines, though several refinements of minor parts are noticeable. The engine and transmission are shown, mounted on a false chassis, permitting of easy inspection of the valve action and other points of the power plant. The famous "999" racing machine is the center of attraction at the stand by reason of Henry Ford's recent record of a mile in 39 2-5 seconds on the ice at New Baltimore, Mich.

Pioneer Auto and Campus Motor Company are showing, for the first time, a new two-cycle, two-cylinder vertical motor of 10 horsepower for either automobile or marine use, mounted on a stand to show its operation. This motor has no crank-case, has open bearings, and the lower end of the cylinder is closed, making an air-tight chamber, furnishing a perfect charge at all speeds. The crankshaft being on top allows placing the motor low down in a boat and provides accessibility.

Reliance Motocycle Company exhibit a new motorcycle called the Reliance, weighing 70 pounds and costing $135—light in weight and low in price, indeed—The motor is of 1 3-4 horsepower.

Notable among the features embodied in the Reliance motocycle is the manner in which the power is transferred from motor to driving wheel. The motor pulley connects by short belt with a concave rubber shod pulley acting directly upon the rear road wheel, the tire thus becoming a cushion to the action of the motor. The drive pulley is brought into or out of contact with the rear wheel by a lever within easy reach. This makes it possible to run the engine entirely free of the bicycle or bicycle free of the engine. A flat belt made as non-stretchable as possible is employed. There is a simple arrangement easily operated for taking up of stretch.

Columbia Bolt and Nut Company shows the Columbia Lock Nut. The nut consists of an inner and an outer part, which, when assembled, are a unit. The inner nut, which is threaded to receive the bolt, is slotted throughout its length and is tapered from above downward to fit and correspond with the taper of the outer or binding nut. It is a positive lock-nut which will remain indefinitely where placed.

Dieter Steam Motor has a 3 1-2 inch bore and a 4-inch stroke, and is of the three-cylinder single-acting type, built on gas engine lines.

In place of slide or piston valves, poppet valves are employed, being adapted to the use of superheated steam.

FORD RACER "999" EXHIBITED BY WANAMAKER.

The valves open wide at the admission of steam, and remain so until the cut-off takes place, thus doing away with the wire drawing of steam as in the ordinary type. There are no stuffing-boxes, consequently no packing; and this feature also allows of the use of superheated steam. A number of other features will repay study by anyone interested in new developments in steam

Caldwell's Motor Lawn Mower attracts a great deal of attention in the basement. All the parts are covered with brass, making it very showy. In operation it cuts a swath forty inches wide and can easily be changed into a steam roller or stationary engine. The engine is of eight horsepower, the boiler using gas as fuel. The machine weighs about 3,000 pounds and costs $1,500. It consumes about 1 to 1 1-2 gallons of fuel per hour. It can be run either forward or backward.

Michelin Tire Company is showing the well known imported French Michelin tires and accessories which are so popular on the other side. A proof of their wearing qualities, they show a complete set still in good order which were run over 7,000 miles by M. Hollander of Hollander & Tangeman, on his F. I. A. T. car in his European tour.

Societe Franco-Americaine d'Automobiles shows in the basement a 15-hp. Panhard tonneau car, fitted with a Rothschild King of the Belgians body, also a limousine body in blue, mounted on a Renault 14-hp. chassis—both of these cars being too well-known to require a detailed description here.

Salisbury Wheel & Mfg. Co. show their line of wooden wheels for automobiles. Their patent artillery wheel has ribbed flanges, which stiffen the web, prevent torsion and keep the bolts from shearing off. A strong feature of the wheel is that a spoke can be taken out and replaced without removing tire or rim, simply removing the outer flange from the hub.

A few other exhibits in the basement exhibition hall will be referred to next week.

Robert Allison of Port Carbon, Pa., is one of the visitors to the show. He can well claim to be one of America's pioneer automobilists, having bought the first Winton ever sold—in 1898

In the dining-room of the Criterion Hotel is a big Peerless touring car, draped with flags, which forms a novel decoration to the room.

The Veeder cyclometer exhibit contains a demonstrating odometer which is being driven continuously at the rate of 2,650 miles an hour, a severe test of the mechanism of this little recorder.

Many Cincinnati automobilists are already planning to make tours from here to the St. Louis World's Fair. Among these are Jesse Lippencott, Frank Roads and Capt. Arthur N. French.

SEEN IN UPPER TIER BOXES.

Cole & Woop.—This firm exhibits an aluminum body with canopy top which is remarkable for a novel and ingenious front window raising and lowering device. The four corners of the window are provided with horizontally projecting pins, the upper pair sliding in grooved metal tracks fastened to the under side of the canopy top and the lower pair moving in grooves milled in the forward stanchions. The front is consequently held firmly by all four corners at all times and has a sliding instead of a swinging motion. In raising or lowering the front, the lower edge travels straight along the stanchions and the upper edge along under the canopy top, so that no portion of the glass passes near either the passengers' heads or the steering gear. When raised it is positively locked in position so that it cannot be accidentally released, but even if accidentally or carelessly lowered, it can do no harm. There is no rattling in either position.

Their patent removable wooden roll, which permits the upholstering of an automobile body to be removed in a few minutes by the removal of a few screws, to repair any damage to the body, and which can be as readily replaced, was shown on an unfinished body which was upholstered during the progress of the show. This device was described more in detail in THE AUTOMOBILE last week.

Hendee Manufacturing Company.—The well-known "Indian" motorcycle of 1 3-4 horsepower is made in only one model, which is shown with a new grip control. This device consists of a flexible shaft connecting with the right grip and leading down inside of the handlebar to universal joints and a telescoping shaft, which connects with the speed lever on the head of the machine. By a twist of the wrist this device not only starts the engine and increases or decreases the speed of the machine, but it also lifts and drops the exhaust valve and makes and breaks the electrical circuit.

Another new feature is a detachable tandem attachment, comprising an extension of the top of the frame, clamped to the seat post and divided to pass around the gasoline tank, together with a rear fork extending down to the rear axle, the ends being prolonged and turned up to make foot rests. There is a full size seat post carrying the saddle, and adjustable handlebars are mounted on the extended top tube. There are a number of minor improvements in the machine.

Champion Manufacturing Company.—The Champion two-speeds-and-reverse transmission is shown complete and in parts for use both in automobiles and in launches.

Dow Portable Electric Company.—A new dashboard vibrator attachment is shown which is designed to obviate the necessity of a large coil on the dashboard. A non-vibrator coil is located in any convenient position in the carriage and is wired to the dashboard attachment, which is a small box about seven inches high, four inches wide and two and a half inches deep, and which contains only the condenser and primary coil, and has a double throw switch so that either of two sets of batteries may be used. Any number of coils may be used with this device. It is also made with two vibrators so that in case of one getting out of adjustment the other may be thrown in by a switch. A full line of coils, ammeters and voltmeters is shown.

G & J Tire Company.—One of the front tires of the Ford racer used by Barney Oldfield in his record-breaking career during the past season and which were made by this company, is a feature of their exhibit. Attention is also called to the fact that the remarkable record of 0:39 2-5 recently accomplished by Henry Ford on the ice at Lake St. Clair, Mich., was also made on G & J tires.

Standard Welding Company.—Electrically-welded copper and steel rims, shafts, tubes and other articles are shown in great variety by this company. Their process is particularly applicable to the forming of rims and other circular forms from straight stock and to the building up of such difficult parts as crankshafts, which may be forged in sections and then welded together. The tubing manufactured by this method excels for mechanical purposes that made by the cold drawn seamless method because the walls are more uniform, the tube in general runs truer to gauge and is more smoothly finished inside.

American Ball Bearing Company.—In addition to a large and varied line of ball bearings of all kinds, complete rear axles, ready for paint, are exhibited, together with several models of stamped-steel hubs, which mark new departures by this company. The new stamped steel front axles as made by this company for the Cadillac Automobile Company and which are a feature of their 1904 vehicle, are also shown.

Universal Jack and Power Company.—An automobile jack of great power and simplicity of action is shown by this company. The operation is by a worm gear acting on a triple threaded screw, which gives a very rapid action. The lifting surface which is unusually broad, surmounts the screw, and is quickly raised by hand to bear under the axle, when the lifting is done, by operating the worm gear by a side crank. The jack, closed, is 12 inches in height and has a lift of 8 inches. The weight is about 10 pounds and the price $10.

Federal Manufacturing Company.—Everything in steel for automobile running gear, including pressed-steel frames,

front and rear axles with chain or bevel gear drives, steering gears, either lever or wheel type, starting and driving chains, steel balls and standardized motor truck parts are shown in great variety by this company.

R. E. Dietz Company.—A novelty shown by these old established lamp makers is the Dietz self-contained generator automobile searchlight. The body of the lamp is prolonged backward to form a tubular case into which the cylindrical generator slides, fitting close behind the reflector. The water valves protrude through a slot in the case and the gas connection is made with a short rubber tube. The water tank surrounds the carbide chamber, and the feed is of the regular Dietz type. There is a 6-inch lens with a parabolic aluminum reflector and the burning capacity is 6 hours with a 3-8 foot burner.

Another novelty is a three-way tail light with white lens to the step, red to the rear and green to the side, and this is also made in the well-known tubular type. A large variety of other styles is shown.

Badger Brass Manufacturing Company.—A new product of these makers is a multiple acetylene gas generator which will supply either two or three lamps as desired; one generator serving for the entire front equipment of two front lights and a searchlight. A new lens mirror reflector which gives a largely increased light is also shown. together with a very complete exhibit of both gas and oil lamps in all standard shapes.

Warner Gear Company.—A double-tilting steering wheel, which tips either forward or backward, when a spring pin upon the top of the steering post is released, and locks automatically upon the return, is a novelty shown by this firm. Equalizing gears and sprockets are also exhibited.

C. J. Iven & Co.—A number of specialties for which this firm is sales agent, are shown, including lamps made by the Standard Carriage Lamp Company of Chicago, the Loomis carbureter, muffler, pump, and transmission; brass fixtures and wicker baskets and seats, spark coils and lamps.

Briscoe Manufacturing Company.—Radiators, tanks, fenders, hoods, the latter in both old style and the side-hinged shape are shown by this firm

Veeder Manufacturing Company.—The Veeder cyclometers and tachometers are attractively displayed at the head of the stairway at the northeast corner of the Garden. A number of automobile front wheels, motor-driven, are arranged with flexible shaft drive to show the Veeder dashboard cyclometer. Some forty odd models are on view and additional ones are constantly being added, so that any standard car may be equipped with the Veeder without the use of other than stock attaching devices.

The tachometer is shown in action, registering maximum speeds of 40 and 60 miles per hour.

Fawkes Rubber Company.—An airless rubber tire is shown which the makers claim possesses cushioning qualities equal to a pneumatic. A cross-section of the tire shows it to be constructed with air chambers on both sides and an inverted V-shaped space against the inner face. Suitable provision is made for transverse stiffness by walls placed at intervals across the side air spaces.

Modern Manufacturing Company.—A line of odometers for automobile or carriage use is shown, the M'Gehan dashboard trip odometer described in the last issue of THE AUTOMOBILE attracting much attention. A novelty in the way of an automobile clock is also shown, the dial being provided with an extra hand which may be set to show elapsed time.

Herz & Co.—The Herz spark plug and other equally meritorious special ies are shown, among which may be mentioned timing devices for jump-spark ignition, asbestos-packed hollow gaskets, terminals, batteries and the Herz oscillum or spark gap device.

Light Manufacturing & Foundry Co.—The Light motorcycle, a high-grade machine with Thor parts, is shown; also an interesting exhibit of rough aluminum castings, representing parts of many of the best known automobiles in the country. The castings are not cleaned or in any way finished, though it requires a very careful examination to discover this fact as the work is uniformly excellent.

Pope Manufacturing Company.—Tribune, Columbia and Rambler motorcycles are shown in a special exhibit on the upper balcony south, and present a number of new features. The new Rambler has a friction sprocket which slips under an extra heavy strain and relieves the chain; a new oiling device on top of the cylinder where the oil is kept warm, spring front forks and a new muffler. The Tribune and Columbia machines have new spring sprockets of identical design, which give elasticity to the drive, new carbureters and other minor improvements.

Gray & Davis.—In this exhibit special attention is called to the new "Bullet" reflector lamp, which is so called on account of its bullet-shape, the back being rounded out so that there are no corners. There is a six-inch lens mirror searchlight which gives a very bright light, by which it is possible to read print at 100 yards distance.

Imperial Wheel Company.—Imperial and artillery wheels are shown with roller, plain or ball bearings.

Varley Duplex Magnet Company.—High-grade ignition outfits are shown in various designs and finishes. The Jumphlame autocoil is wound on an automatic machine, insuring uniformity to the product. All coils made for automobile ignition are fitted with a hinged vibrator admitting of inspection, or the cleaning of contacts without disturbing the adjustment of the vibrator.

C. F. Splitdorf.—Spark coils in a great variety of styles and mounting are shown. One of the features of the stand is a duplicate of the celebrated Mors electrical timing device which will be used to time the coming speed trails at Daytona, Fla. The big Splitdorf coil shown at last year's show is again on view and is one of the snappiest things in the Garden.

A. H. Funke.—Acetylene lamps with self-contained and separate generators are shown. The mechanism of the Autolyte lamps is well understood by automobilists and the designs of the lamps have contributed to their popularity. A demonstration is given at the stand of the compressed acetylene system, recently described in THE AUTOMOBILE, the tank shown having a capacity of eighty-four cubic feet. Single and chime horns in great variety, also several sizes of foot bellows for attachment to horns.

Rose Manufacturing Company.—Never-out lamps for oil and acetylene are the product of this company and the complete line is attractively displayed. Among the novelties of the exhibit is a neat little launch lantern with green and red side wings and white bullseye front light, made in strict accordance with U. S. marine regulations.

T. J. Wetzel.—The Eastern representative of the several firms exhibiting at this stand. The full line of products of the *National Cement & Rubber Co.* is shown, comprising cements, rim and rubber, plugs, patches and supplies; an interesting line of parts, stampings and sprockets made by *Parish & Bingham;* the tilting steering wheel of the *Centaur Motor Company,* which tilts by the simple pressure of a button conveniently placed under the wheel near the column; the *Brown-Lipe Gear Company's* differentials, steering devices, etc.; and the entire line of the *Baldwin Chain & Mfg. Co.'s* product for the automobile and bicycle trade.

The Post & Lester Co.—In addition to a very complete line of sundries and supplies, a new spark plug is shown, called the Neverskip. It is formed with the secondary wire end flush with the inner face of the plug, the wire being concentric to a small hole in the face of the plug. An air or gas chamber is provided inside the plug which allows the passage, to and fro, of gas as it is alternately compressed and expanded, thereby scouring the parts and keeping them free from soot.

Detroit Motor Works and *P. J. Dasey.*—The Sta-Rite specialties are attractively displayed at this stand, prominent among which may be mentioned the well-known Sta-Rite spark plug, dash and box spark coils, battery testing devices and gasoline gauge. The new model spark plug is

provided with an additional spring washer fitted to the inside porcelain, taking care of expansion under adverse conditions. Eighteen styles of the Sta-Rite plug are shown, five of which are made with inside Mica core. The gasoline gauge is a compact little sundry which will accurately measure in gallons the contents of the gasoline tanks of twenty American cars.

The coils shown are well finished and have an enviable reputation for efficiency, the insulation being particularly high, sufficient to dissipate the secondary current.

Geo. R. Taylor Co. is showing a particularly complete line of automobile baskets and hampers. The design and workmanship are fine, and the brass mountings contribute to the stylish appearance of the product. A great variety of sizes and shapes are available, to fit cars of American or foreign manufacture.

20th Century Mfg. Co. shows a full line of oil and acetylene lamps in various finishes, and lamp parts, brackets and attaching devices to affix lamps to any part of a bicycle or automobile. Horns and mica spark plugs form an attractive feature of the exhibit. A new oil syringe is shown which meets with approval, as it may be operated with one hand.

Pope Mfg. Co.'s showing of automobile sundries is unusually complete and embraces everything needed by dealers and users of the motor car. A well printed catalogue of 106 pages sets forth the line and is much sought by visitors to the company's exhibit.

Stodder Tire Co. exhibits the well-known Stodder single tube and a new clincher tire, made on conventional lines, but embodying the company's puncture-resisting construction. A variety of sizes are shown, both in section and in complete tires.

Midgley Mfg. Co. shows several beautiful fully-finished specimens of the Midgley tubular steel wheels of the popular artillery type; also stampings of spokes and felloe sections.

Whalebone Rubber Co.'s tire is shown in a number of sizes, both complete and in section. The design of the tire is original with the company and while of the single tube type, it is claimed to possess points of superiority to the popular clincher. The flat tread gives the mounted tire a very pleasing appearance and when properly inflated should afford immunity from side slip with constant tread surface under varying loads.

Shelby Steel Tube Co. shows, in addition to a very complete line of tubes of various dimensions and sections, a new departure this year in the way of a rear axle casing, the outer end being expanded and sized to take a ball cup of suitable size. These axle casings are made in any length and with cup diameters to fulfil specifications of automobile manufacturers.

Climax Igniter Co.—A compact mechanical igniter for explosion engines is shown. The mechanism is electrically actuated, all the parts being self-contained in a metal casing, 1 1-2 inches in diameter by 2 1-2 inches long, on one end being the usual threaded plug through which the make and break contact parts protrude. The device is operated and the spark furnished from six cells of dry battery, or a dynamo may supply the current.

DISPLAYS IN CENTRAL BOXES.

Emil Grossman, American agent for the Continental Caoutchouc Company, shows these tires on many of the imported vehicles in the show and at his stand. These tires were on the Mercedes driven by Jenatzy at the International Cup Race and were largely in evidence on all of the American tracks last year.

One of the special features of the exhibit is a light lifting jack weighing three and a half pounds, working on the principle of a double eccentric inclined plane. Other novelties are a jack of French type working on a worm gear, and a four-cylinder automatic magazine acetylene gas generator which we will describe in detail later. A new searchlight lamp is also shown at popular price Continental horns and lamps are also shown in great variety and profusion.

Leon Rubay, sales agent for J. La Costa & Cie, is showing a dashboard illustrating their ignition apparatus. Briefly it consists of a case containing an ignition coil, with push buttons and motor switch and sparking controller, obviating the need of cranking the engine to find which cylinder is working. Another ingenious device is a series of ten push-buttons on a plate for use in limousine bodies. The pressing of one of these buttons, which are marked, indicates on the dashboard in red letters lighted up by electricity, the direction in which you wish the operator to turn. Another ingenious device is their commutator showing a wipe contact breaker.

One of their specialties is a storage battery of small size, but large capacity. A combination sight and force feed oiler operated by water circulation from the tank is another ingenious arrangement shown.

The Pittsfield Spark Coil Company shows their latest dash coil which consists of any number of coils arranged separately, and detachable for each cylinder in use on the motor. They are arranged in a mahogany case, with handsome brass trimmings, so that they can be placed either on the dash or on the step.

The Manhattan Lamp Works produce the Saxon Motor Lamps, and they are also showing a novel searchlight lens mirror with a swivel. They are also showing smaller sizes of this searchlight at popular prices.

Hyatt Roller Bearings.—The well-known Hyatt Roller bearings are shown in all sizes, and in sectional models working on pulley wheels. Their output during the last year for rear axle work on automobiles increased over 100 per cent. Since the last show the company has arranged to produce their bearing for front wheel hubs, to meet a demand from the makers, who had previously been using their rear wheel bearing only.

Dayton Electrical Manufacturing Company show their Apple Automatic Dynamo carrying both jump spark and make-and-break. They are also showing and operating a new magnetic plug, which does away with the induction coil, and a compact magneto for marine engines with a new spring base for adjustment, so as to take up the wear. The Apple dynamo igniter weighs 16 1-2 pounds and the magneto, in aluminum, 8 1-2 pounds; in brass, 10 1-2 pounds.

Whitney Manufacturing Company are showing, in working operation, models of all their chains as used by the leading makers The feature of their exhibit is their new chain called the Wizard, for racing purposes, which is very light in weight, but showing great strength. The peculiarity of the chain is a long, deep-jointed tooth running over a broad, double faced sprocket having pins instead of teeth, thus giving rolling friction instead of sliding friction. Highly convenient is a side link for roller chain, which may be detached without tools. All the links on the chain are of course detachable, but one link is marked specially with a series of notches for identification, and this one is held in place by a clock-spring steel latch, and is readily removable by the thumb nail.

Whitlock Coil Pipe Company shows all its well known types of cellular coolers, improved in detail and finish, and which are now largely used by the biggest makers in the show. The company's modification of the honeycomb type presents a maximum amount of cooling surface with a minimum amount of metal.

The Electrical Contract Company are showing a new portable dashboard type of coil, of small dimension with high-speed vibrator. The secondary terminals are protected on the bottom by a slide which covers them from moisture. A handy little thing is a dry cell tester, which is about as large as a lead pencil, and is used to test separate cells by merely placing the terminal in contact with the terminals of a cell, when dull-red light produced at one end of the pencil in an open diaphragm indicates if the proper amperage is present.

India Rubber Company show their India "G & J" auto tires, solid wired-on tires, cushion tires, endless solid tires for heavy vehicles and their India side wire tires for use on heavy duty cars. Bicycle tires are also shown in profusion.

Two stands among the central boxes were occupied by the B. F. Goodrich Co. and the India Rubber Co.; at both of which information in regard to possible innovations in their tires could not be conveniently obtained for this week.

HERALD SQUARE HALL SHOW.

The overflow automobile exhibition, in the Herald Square Exhibition Hall, on the top floor of the huge Macy building, at Broadway and 34th Street, is surprisingly large and representative, in view of the greater counter-attraction at the Madison Square Garden, and the exhibits appear to great advantage by reason of the abundance of space and light. The hall is said to be the largest single floor space in the city, with an area of 65,000 square feet, lighted by an arched glass roof in addition to the side windows. It is handsomely decorated with flags and bunting, and an orchestra plays in the afternoon and evening.

There are forty-two exhibitors, with the promise of more next week, as the Herald Square show is to last two weeks. Many of the exhibits are those of firms unable to obtain space at the Garden; others are represented in both exhibitions. There are ten exhibitors of complete vehicles, not including two makers of motor bicycles, who show twenty-four complete vehicles. Of these, thirteen are gasoline, eight electric and two are steamers.

In the gasoline class, foreign vehicles predominate, there being nine exhibited. these comprise two 1904 Panhards, of 15-horsepower, with aluminum bodies and new style radiators; a 6-horsepower front motor De Dion-Bouton, 6-horsepower brougham, and a 9-horsepower tonneau touring car of the same make; two Renaults, of 10 and 14 horsepower respectively, a 20-horsepower, Rochet-Schneider and a 12-horsepower Criterium.

The American gasoline machines comprise the Oldsmobile runabout and delivery wagon, the Franklin air-cooled, the Cameron 6-horsepower runabout, with vertical air-cooled motor, which is shown for the first time, and the U. S. Long Distance model of last year.

Electric vehicles are the Buffalo touring car, which, last October, made a run from Boston to this city, and was the first electric vehicle to accomplish the trip; the Buffalo golf brake and two Buffalo stanhopes. A Synnestvedt twelve-passenger opera bus and five-seated tonneau touring car, and a Baker runabout and stanhope. The steam models comprise two tonneau touring cars, the Geneva, with a flash boiler and vertical front condenser, and the Empire, with a semi-flash boiler. There are also two motor bicycles; the Indian and the Reading Standard and Harry S. Harkness' Paris-Madrid racer. A motor boat, portable automobile houses, automobile and technical publications and a wide variety of sundries and accessories make up the remainder of the exhibition. The attendance promises to be a crush after the close of the big show at the Garden.

Exhibitors at Motor Boat Show.

The automobile exhibition at Herald Square Hall is to be followed in February from the 8th to the 20th, by a display of motor boats and launches. This will be known as the National Motor Auto Boat Exposition and will be in charge of Dr. Robert Taylor. The following concerns have signified their intention to have exhibits:

Standard Motor Company, Fairfield Motor Company, Isham Motor Company, Truscott Boat & Motor Company, Gas Engine & Power Company, Hasbrouch Motor Works, Palmer Bros., Cushman Motor Company, Carley Life Boat Company, Fairbanks, Morse & Co., Richardson Engineering Co., Yacht Gas Engine & Launch Co., Camden Anchor Company, Whitestone Hollow Spar & Launch Co., Clifton Motor Co., Newbury & Dunham, Lozier Motor Company, Buffalo Electric Company, Lowe & De Groob, and the Victor and Englehardt concerns.

Californians at the Show.

SAN FRANCISCO, Jan. 9.—E. P. Brinegar, president, and John F. McLain, Los Angeles manager, of the Pioneer Automobile Company of this State, left for New York today. They will spend some days at the several factories which the Pioneer company represents and will reach New York in time for the automobile show.

C. A. Hawkins, general manager of the White Sewing Machine Company in San Francisco, starts today for a visit to the White factory and the New York show. It is said that he has placed orders for 100 model D White touring cars. Forty-one of these cars have been sold and delivered on this coast up to the present time.

Meetings and Banquets.

Isaac B. Potter's Road Convention.

Operators of power-driven machines, as well as advocates of better highways from various parts of the country, attended the first convention of automobilists that was held in Madison Square Garden yesterday afternoon under the auspices of the American Motor League. Addresses by men notable in the campaign for better roads were made and unusual enthusiasm was in evidence.

Isaac B. Potter, president of the American Motor League, in opening the meeting, told of the work which the organization is doing toward securing better highways, erecting sign boards and publishing tour books.

Hon. Martin Dodge, director of the U. S. Dept. of Road Inquiry at Washington, among other things, said that the question of good roads was not a party issue, but an all-absorbing matter for the country at large. Other speakers were: R. W. Richardson of Omaha, Neb., secretary of the National Good Roads Association; Frank D. Lyon, representative of the State Engineers Department at Albany; James H. MacDonald, known as the "Macadam of America," who is the highway commissioner of Connecticut; James W. Abbott, of Denver, the Western representative of the Government Road Inquiry Bureau, and Augustus Post, who spoke of good roads from the standpoint of an automobilist. There was also a talk on the roads of the New World, illustrated with stereopticon views, by M. O. Eldredge, chief assistant of the Government Road Inquiry Bureau at Washington. Others in attendance were: Albert R. Shattuck, former president of the Automobile Club of America, and Congressman Geo. A. Pearre of Maryland. The American Motor League's Convention continues Wednesday, Thursday and Friday.

Hyatt Roller Bearing Banquet.

The Hyatt Roller Bearing Company of Newark entertained over one hundred guests at a banquet and vaudeville on Wednesday night, repeating an enjoyable affair of the same kind held last year. W. J. Morgan acted as toast-master, and the principal speaker of the evening was Col. A. A. Pope. Colonel Pope's topic was the "Up-building of a Great Business," and his outline of what was necessary to found a large and permanent business, was most entertaining and instructive. After Colonel Pope's speech, a song, dedicated to the "Mud Larks," written by C. H. Gillette, was sung. Several vaudeville artists contributed to the amusement of the guests, and it was a late hour before the last ones took their departure. Mr. Steenstrup of the Hyatt company had the affair in charge, and from the time the guests left the Madison Square Garden, in special buses provided for their transportation, and in other ways, made all feel pleased with the introduction of "trade banquets."

Automobile Trade Club Smoker.

The round of evening entertainments during show week started off on Tuesday

night with the smoker of the recently organized Automobile Trade Club. There were fully two hundred members and guests present, and the affair was one of the most enjoyable social features that has ever been undertaken in the autmobile trade. The gathering, while primarily representative of the automobile trade in New York, was by no means confined to the actual dealers. There were representatives there from every branch of the industry and sport, and they all joined hands in simply having a good time..

The whole entertainment was most informal, and, aside from a few speeches, consisted entirely of music.

W. E. Scarritt, president of the Automobile Club of America, in a speech, congratulated the new club upon its membership and the success of its entertainment. Among those who told good stories and lent enjoyment to the occasion were: A. D. Proctor Smith, president of the Club; E. B. Gallaher, secretary; Colonel Pardee, O. J. Woodward, O. J Gude, S. A. Miles and Ezra Kirk

Col. Pope's Informal Luncheon.

Col. Albert A. Pope, president of the Pope Manufacturing Company, gave an informal luncheon to about forty of the men closely associated with him in the automobile and bicycle industries, Monday noon at the Union League Club. The season of the automobile show at Madison Square Garden has for years been an opportune time for managers of the various factories to meet and compare notes on trade conditions. The following gentlemen were present:

Col. Albert A. Pope, Albert L. Pope, George Pope, Paul Walton, Robert L. Winkley, Nathaniel C. Fowler, Robert M. Beck, James S. Marvin, Arthur L. Patrick, H. C. Hall, C. E. Walker, Wilbur E. Walker, Harold L. Pope, Ned Lawrence, H. A. Leinhard, J. F. Cox, F. C. Gilbert, H. H. Rice, Elliott Mason, W. J. Foss, W. E. Eldredge, R. D. Garden, H. H. Fulton, Geo. C. Russell, E. E. Hinsman, A. L. Atkins, A. E. Schaaf, H. S. Leyman, James Mannaughtan, W. C. Johnson, A. L. Garford, W. L. Colt, Haydon Eames, C. E. Hadley, A. O. Smith, W. W. Austin, L. M. Wainwright, Arthur W. Pope, E. W. Pope, Wm. A. Redding, M. V. Kelley.

Exhibitors for Boston Show.

BOSTON, Jan. 18.—Arrangements for the automobile show of the Boston Automobile Dealers' Association in Symphony Hall during the week of March 14 to 19, are practically completed, and everything is in readiness for the exhibit. All the space has been disposed of, and Saturday, Manager Campbell of the show committee made public the list of exhibitors, which is as follows:

Kenneth A. Skinner, DeDion; J. H. McAlman, Locomobiles; Pope Mfg. Co., Toledos, Hartfords and Cadillacs; Oldsmobile Company of New England, Oldsmobiles; Moore & Smith, Autocars; Columbia Motor Vehicle Co., Columbias; Harry Fosdick, Wintons; A. T. Fuller, Packards and Northerns; A. B. Morrison, Peerless cars; Reed-Underhill Co., Knox cars; Boston Auto Exchange, Phelps cars; Rossell Driske, Clements; E. A. Gilmore, Ramblers; A. R. Bangs, Franklins; Crest Mfg. Co., Crestmobiles; A. J. Coburn Co., Camerons; C. H. Lowe, Whites; F. E. Randall, Stevens-Duryeas; Automobile Headquarters, Chester I. Campbell, A. A. & P. Co. line; A. T. Fuller, Orients; Pope Mfg. Co., Waverleys and Tribunes; F. C. Reed, Yales; American Darracq, Darracqs; Lock Register Co., Wellingtons; Country Club Car Co., Country Club Cars; Hollander & Tangeman, F. I. A. T. cars; Dowling & Maguire, Pierces; C. F. Lyman, Lyman cars; O. S. Henshaw, Thomas cars; E. B. Gallaher, Richard-Brasiers; G. M. Brown, Appersons; 20th Century Lamp Co., lamps; Continental Caoutchouc Co., tires; Boston Cycle & Sundry Co., accessories; National Oil Heating Co., kerosene burners; S. F. Bowser Co., oil tanks; Gray & Davis, lamps.

All the automobile journals will have exhibits in the hall and a big display will be made by the automobile class of the Y. M. C. A.

One of the novelties booked for the Boston show is a machine to be turned out by the new American Automobile & Power Company, a Maine corporation formed by Boston men with offices at 5 Park Square, Boston. This machine is at present unnamed, but it will have a two-cylinder gasoline motor with the flywheel weighing only about 135 pounds, hung directly between the two cylinders. It is claimed that this feature will insure ease of operation and a saving in power. The motor is water-cooled and the valves are cooled by the introduction of air inside the stems. The car will be built to weigh 1,100 pounds and retail at $750, and although of runabout pattern, it will be of twelve horsepower. E. M. Goodrich, of Sanford, Me., is president of the new company; H. C. Long, a Boston attorney, is treasurer; S. E. Ward of Boston, is vice-president, and C. I. Campbell, formerly agent for the Mobile Company of America in Boston, is secretary and general promoter. The company has made arrangements with a Lawrence manufacturing concern to build for them, and the prime object will be to build for a group of large dealers covering the major section of the country, with whom selling arrangements are understood to already have been perfected.

American and Foreign Automobile Fixtures for the Winter.

Jan. 16-30.—Automobile Show. Herald Square Exhibition Hall, New York. Alfred Chasseaud, Manager

Jan. 23-Feb. 4.—International Automobile Exhibition at Brussels.

Jan. 26-30.—Philadelphia Automobile Show. Automobile Club of Philadelphia and Automobile Dealers' Association of Philadelphia.

Jan. 25-Feb. 6.—Racing Tournament at Daytona, Fla. Ormond-Daytona Sea Beach. Florida East Coast Automobile Association.

Feb. 6-13.—Fourth Annual Automobile Exhibition, Chicago. Coliseum Building. National Association of Automobile Manufacturers and Chicago Automobile Club.

Feb. 6-13.—Annual Meeting and Election of American Automobile Association, at Chicago.

Feb. 8-20.—National Motor Boat Exposition. Herald Square Exhibition Hall, New York. Dr. Robert Taylor, Director.

Feb. 12-24.—Second Annual Automobile Exhibition. Crystal Palace, London. Society of Motor Manufacturers and Traders.

Feb. 15-20.—Third Annual Exhibition at Detroit. Detroit Light Guard Armory. Tri-State Automobile and Sporting Goods Association.

Feb. 29-Mar. 5.—Cleveland Automobile Show. The Grays Armory, Cleveland Automobile Club.

Mar. 6-12.—Second Annual Buffalo Automobile Show. Convention Hall, Buffalo. Automobile Trade Association and Automobile Club of Buffalo.

Mar. 8-12—First Automobile Show. City Hall, Springfield, Mass. Automobile Club of Springfield.

Mar. 14-19.—Third Annual Automobile Show, Boston. Symphony Hall. Boston Automobile Dealers' Association.

Mar. 17.—Start of Touring Trials. Paris to Rome, organized by La France Automobile.

Mar. 19-26.—Motor Car Exhibition, London. Agricultural Hall. Cordingly & Co.

Mar. 20.—Opening of Automobile Festival at Nice, France.

Mar. 21-26.—Fourth Annual Washington Automobile Show. Washington Light Infantry Armory. Washington Automobile Dealers' Association.

ANTI-TRUST ACT WON'T APPLY TO SELDEN METHODS.

In reply to a complaint entered by J. M. Bridges of Carlisle, Pa., with the Department of Commerce and Labor, Washington, D. C., and with Attorney General Knox, in regard to alleged violation of existing federal statutes by the Association of Licensed Automobile Manufacturers, the commissioner of the department stated that the methods of the A. L. A. M. in its efforts to collect royalties on the Selden patent do not violate the Sherman Anti-Trust Act, and referred the complainant to the case of Bement *vs.* National Harrow Co., 166 U. S. 70, in which a Supreme Court decision was rendered on a similar basis of facts.

Motor Express Service for 'Frisco.

A company has just been organized here to provide an automobile express service in San Francisco and the vicinity. It has been incorporated under the name of the California Auto Express Company. It will make contracts with business firms for general parcels delivery and will provide an automobile omnibus service to hotels and interesting points of the city and neighborhood, such as the ocean beach, Cliff House, Golden Gate Park, and the United States Military Reservation at the Presidio. A storage and repair department will be established and cabs will be put in operation.

Tendencies Embodied in the Exhibits.

SHOW VIEWS BY HUGH DOLNAR.

January 17, 1903, January 16, 1904, a year lacking a day between the two Garden shows of American made automobiles. What is the true story of this momentous twelve months? What has been born of the strenuous travail of 1903? Whither tend the footsteps of the lusty infant uncovered Saturday night, January 16, 1904, in the capacious cradle of Madison Square Garden—all too small for the great throng eager to view the newest and best of the fiery chariots which are to bear the human race to the heaven of clean and silent city streets, and the endless good of that swift and certain individual and special carriage from place to place, which is now an urgent need of civilization?

The steamship and the railway carry the many and the much, quickly, surely and safely, so that now all is fairly well with the long journey, but the world yet seeks eagerly for the magic carpet and the mechanical horse which are to carry the one or the few when and where trade, gain or pleasure require speedy and certain travel.

The 1903 Garden display proved that the American motor car really existed, and made us proud of what we had done, and gave great promise for the future, but did not point so distinctly to the precise means by which we were most likely to be best served as does this 1904 collection of self-propelled vehicles, which very clearly places the interval combustion motor far to the front for all purposes of general use, and strongly indicates the special lines of employment for which electric driving is most suitable, and declares in the most unmistakable manner that the steam boiler is considered too heavy a handicap to be endured in small wagons, and that unless some way can be found to supply steam without boilers of any form now known, and use steam with only a very small loss of water, the steam wagon is certain to disappear. The steam boiler and non-condensing steam engine with its unceasing demand for water, are too bulky for the power they produce, though it is true that they deliver power in more desirable form for wagon driving than any other motor. The steam wagon may not disappear, but the boiler must be eliminated, and no fire open to the air can be tolerated in a wagon to be used on common roads.

Steam wagons made a vastly more prominent feature at the 1903 show than in this 1904 display, where there are few steam engines shown, and those which are on view pay curious tribute to their conqueror, by taking on internal combustion motor forms of multiple cylinders with single acting pistons, their designers seeming to forget that it is not the steam engine, but the steam boiler and the boiler feed water which make the steam, as now generated, less suitable for driving road wagons than the internal combustion motor, which needs no boiler at all, and lights and extinguishes its concealed fires in the safe recesses of its motive cylinders.

The electric driven vehicle in its two forms of the elegant private carriage and the ponderous truck, neither to go far from home, are largely in view, and hold their own fields of employment safely and certainly, and if the Edison battery, now shown for the first time at work, is what it is said to be and appears to be, incapable of injury by either disuse, or rapid charging and discharging, the electric wagon must come into constantly extending employment, and will push all other systems of short-range mechanical traction very hard for first place.

For the long run there is but one motor, the internal combustion engine fired with either kerosene or some form of dry carbonaceous material, and save the steam wagons, which in some instances are said to fire as well with kerosene as with gasoline, there is no example in the 1904 exhibit of cars driven by any fuel other than gasoline.

So far, the automobile builders have been too busy in perfecting the gasoline motor, the power transmission elements and the running gear of the wagons, to endeavor to use heavy oil for fuel, but we shall now soon come to burning kerosene instead of gasoline, because we are about at the end of the riddle of the wagon driving machinery.

The 1904 cars are very nearly as good as will ever be constructed, and show every individual element needed to produce a perfectly satisfactory automobile, excepting a condensing steam engine without a boiler, and its competitor, a satisfactory kerosene-burning cylinder-fired motor. It is not impossible that these two, as yet unseen, highly desirable motors will be soon found, and found to be one and the same machine when reduced to final form. But this is yet in the future, and is as gauzy a dream now at this beginning of the 20th century as the gas engine was at the beginning of the 19th century.

What we have now on view and ready for purchasers at the Garden, is, for general purposes of the unlimited run, the gasoline wagon, driven by one, two, three or four cylinders, horizontal, inclined or vertical, set either crosswise or lengthwise of the vehicle, American design and construction, in many sizes and types, and at all prices from $425 up to $4,000, and more if the purchaser wishes to pay more, for single vehicles, all thoroughly well made, vastly better taken altogether than any previous collection, well finished, of good appearance, and greatly to our credit. We have done something We shall do more, but we have certainly made a good beginning.

Some of these good wagons are very simple, and some of them are extremely complicated, all are better than ever seen before.

Is the simplest wagon the best wagon? To obtain the best result of most certain transportation at the lowest cost and with most safety and comfort, must we have a very complicated and intricate motor and transmission gear, or can we obtain equally good results by far fewer parts, far less ingenious combinations, and far less costly cars?

The "999" on which Ford made his mile in less than 40 seconds, the fastest mile ever traveled by a man who lived through such a miraculous flight, is the simplest four-cylinder motor car now at the Garden. Four vertical cylinders in front, a horizontal shaft running fore and aft to a plain bevel gear transmission to the single-piece rear revolving axle: this is all that is needed to drive a wagon a mile on a level straightaway track in 40 seconds.

Does this primitive "999" embody a great lesson of simplicity?

Turning to wagons which do not go so fast, but do go far over any road, there are at the Garden several examples of extremely simple one and two cylinder wagons, such as the Olds, the Cadillac, and the Ford and many others, light in weight and low in cost, highly serviceable, certain in action and readily controlled. What is the lesson these fine small cars teach, and what is their prophecy as to the form and construction of the wagon of the future?

On the other hand, some of these 1904 exhibits are among the most highly organized and complicated cars ever constructed, showing the highest ingenuity in their intricate mechanical effects and combinations, and the most advanced workmanship in their production, the Packard and the Buffum four-cylinder cars, the latter never before shown in New York, being as good, as elaborate in design and as perfect in workmanship as anything ever made anywhere, and among other of the higher priced touring cars fully equalling the very best French productions in every particular of design and finish.

What is the true significance of these superb results of American inventive talent, American factory plant and American handicraft?

Our fine 1904 automobiles will certainly destroy the market for costly imported cars here: of that there can be no question.

And there is a large and constantly increasing demand for powerful and costly cars, elegantly and luxuriously appointed in every particular, which will fully satisfy the purchaser who is pleased to display lavish expenditures to the common herd, as well as the seekers after the ultimate, who want the most powerful, the fastest and the most impressive vehicle that skill and labor can produce.

But what commercial and economic

relations do these truly regal constructions bear to the smaller, less costly, but equally perfect and desirable cars which are to be used by the average American in the day's work, year in and year out?

So far as can be seen now, these two important classes of automobiles have no relation or interdependence at all, nor do their paths cross at any point. Each is in a class by itself, and there is so much difference between the construction of the car listing at $3,000 or $4,000 and that offered for seven or eight or nine hundred dollars that no single maker will find it profitable or desirable to make his product include both a very high-priced car and a low-priced runabout, or even a "convertible" tonneau type of vehicle, and it seems certain that makers who continue in the field will follow the lines on which they begin, and make no attempt to enter the territory of others.

The contests between makers in the same classes will be severe, and it will undoubtedly be found much easier to reach commercial success in the manufacture of a car selling for less than $1,000 than one costing more than that sum, and that an enormously greater number of cars priced between $400 and $1,000 will be sold than of those higher in price.

The marked falling off in the number of steam wagons shown, is accompanied by a very notable increase in the air-cooled motors exhibited.

The use of water for any purpose on a vehicle is always an inconvenience, especially in winter weather, and it is very clear that the automobile must be serviceable the year round, if it is ever to displace the horse. In freezing weather the water-cooled motor is always liable to damage, delay, and vexatious repairs, and in addition the car can be made much lighter and less costly by air-cooling, and if the assertions made by the exhibitors of some of the air-cooled motors at the 1904 show are true, it seems that the water-cooled motor must disappear, if not in the very largest motors, at least in the smaller wagons, in which the largest purchasing class is most directly interested.

This possibility gives special interest to the air-cooled motors which form one of the principal advancements exhibited.

The Orient Buckboard, shown last year, air-cooled, has been materially improved by enlarging the cylinder and adding coiled springs to support the rear end of the buckboard over the rear axle, 26-inch wheel, $425.

The "Franklin," H. H. Franklin Company, Syracuse, N. Y., as shown for the first time last year, used four air-cooled cylinders, crankshaft cross-wise, in front, one model only. The Franklin now shows three greatly improved models, a 1,000-pound runabout, $1,400; a tonneau body on the same chassis, 1,400 pounds, $1,650, and a touring car, four cylinders, 4x5 inches, air-cooled, bevel-gear drive, 24 horsepower nominal, 1,800 pounds, $3,000. The Franklin cars are of good appearance, the motor hood is hinged to the chassis frame in front, and lifts forward and up, so as to fully expose the motor to the eye and hand, and are in every way convenient wagons, and the motors are said to be capable of running at 1,200 r.p.m., standing still, without overheating.

The "Santos Dumont," Columbus Motor Vehicle Company, Columbus, Ohio, is a large touring car, driven by an air-cooled motor, 20 hp. nominal, four vertical cylinders, 4 x 4 1-2 inches, having 2,600 square inches of radiating surface in the form of ribs cast integral with the cylinder and head. The crankshaft is set lengthwise of the car and drives the change gear-shaft, set cross-wise by a bevel gear, the change-gear being of the constantly-engaged friction-clutch-actuated type, three speeds forward and reverse, with sprocket and chain to the divided rear axle.

The air-cooling is direct on the front cylinder, and a strong side current of air is forced against the right side of the other three cylinders by a large fan.

The "Santos Dumont" is said not to give the slightest trouble from overheating, and to perform admirably on the road.

The "Imperial," H. H. Rodgers Company, Columbus, Ohio, is shown in three attractive forms, as a runabout, a delivery wagon and physician's coupé, all driven by air-cooled motors, same chassis for each vehicle. The motor is a pair of horizontal opposed cylinders, 4 1-16 x 4 1-16 inches, two cylinders only, in extreme front, set crosswise of chassis frame, with direct bevel gear transmission to divided rear axle, two universal joints in the transmission shaft, nothing at all inside the wagon body save the fuel tank under the seat. Wheelbase 78 inches, gauge 56 inches, wheels 30 inches, 3 inch Goodrich tires, 1,150 pounds, $950. The delivery wagon weight is 1,500 pounds, price $1,150, and the coupé, weight 1,450 pounds, lists at $1,350. This is a very promising exhibit. It is asserted that the motors will run cool at 2,500 r.p.m., summer temperature, and that the runabout was driven in Ohio, August last, sixty miles in 110 minutes with ease.

The "Crestmobile" shows two light cars driven by two forms of air-cooled motors, these vehicles being very much superior to the Crestmobile shown in 1903. The smaller one is driven by a single vertical cylinder motor in front, having the cooling ribs cast on the cylinder; the larger Crestmobile has a motor of the horizontal opposed two-cylinder type, set crosswise of the wagon in front and having sheet copper cooling flanges, with a separate cooling fan for each cylinder; the smaller motor has a single fan. The Crestmobile has had a somewhat extended experience with air-cooled motors, and its present exhibit of much larger and more pretentious cars than before, is good evidence of faith in cooling without water.

The Knox, which now claims to rank third among American automobile producers, made a first exhibit of air-cooled motor-driven vehicles in 1901, showing a three-wheeled vehicle, "porcupine" air-cooled cylinder, 4 1-2 x 6 inches, no fan. The Knox story forms the most important chapter of air-cooled motor history yet recorded. Beginning with thirty hands, the Knox sold about 100 air-cooled motor three-wheelers built in 1901.

The 1902 Knox model, four wheels and porcupine cylinder 5x7 inches, with fan, weighed 1,500 pounds, price $1,000, and 300 were built and sold in that year. The 1903 Knox, model 3, had a porcupine cylinder, 5x8 inches, with fan, weight 1,800 pounds, price $1,200, and 723 of these runabouts were built and sold, and in addition 25 delivery wagons, same motor.

The 1904 Knox, tonneau or surrey body, 84 inches wheelbase, 32-inch wheels with 4-inch tires, weight 2,325 pounds, price $2,500, is driven by a pair of opposed horizontal porcupine air-cooled cylinders, 5x7 inches, set lengthwise of the wagon. The porcupine "quills" are four steel rods, 2200 of which are driven in each cylinder, giving about nine times the plain cylinder surface for radiation, as against 4 1-2 times the cylinder surface, which is the extreme increase, according to the Knox expert, gained by any ribbed radiation surface extension.

Beginning with 30 men in 1901, the Knox company have now some 700 names on the pay-roll which calls for over $7,000 weekly, and the Knox factory at Springfield has been increased, in 1903, by one building 350 x 50 feet, two floors; one 100 x 50, four floors, and 90 x 40, two floors.

These pay-roll and factory figures show what has been done with air-cooled motors already. What will yet be done with air-cooled motors remains to be seen, but is hardly open to question.

In addition to this impressive list of wholly air-cooled motors, the "Covert," Lockport, N. Y., uses a water-cooled cylinder head in combination with an air-cooled cylinder, and is used in cool weather without water. The Covert cylinder is 4 x 4 1-4 inches, 1,200 r.p.m., 100 pounds compression, weight 740 pounds, price $750.

While it is true that the French makers have not had a satisfactory experience with air-cooled motors, the results obtained by the constructors of these American wagons during the past year have been most convincingly in favor of air-cooling, and the greatest confidence is expressed as to the entire success of vehicles which carry no water at all.

It is true that an extremely high compression cannot be used in an air-cooled cylinder and this is probably the cause of the French troubles with air-cooling. The price of gasoline in France is double the cost here, and this forces the French motors

to use the highest compression possible, though high compression, while gaining high fuel economy, entails a number of undesirable consequences, and American practice generally tends to lower compression than the French use. The Covert claims 100 pounds compression with no trouble from overheating, the Knox declares in favor of about 65 pounds compression. The air cooling has not yet had time enough on the road to fully develop its possibilities, but the highly successful experience of the Knox, and the extended list of air-cooled cars in this 1904 show, give good evidence that water cooling is not a necessity for any class of vehicle whatever, and that, in consequence, the very greatest objection to cold weather employment of mechanical traction bids fair to disappear. Because of all this, the great increase in number of air-cooled-motor driven cars at the 1904 show must be regarded a feature of the highest practical significance, making directly toward that general use of motor wagons which will come as soon as the ordinary individual can drive them without trouble under ordinary road conditions, freezing weather included.

By far the most important exhibit in point of motive economy possibilities, is the compound 60-horsepower Graham and Fox motor, which drives the very large touring car, weight 3,150 pounds, seven passengers, shown by the Eisenhuth Company, Middletown, Conn This is the first wagon of its kind, and nothing can be said of it with certainty. If the assertions made concerning it are true, it effects a saving of 47 per cent. in fuel. The motor is a very heavy compound, two-cylinders, 7 1-2 inches diameter, Otto cycle, exhausting into a third cylinder 12 inches diameter, all three cylinders being 6 1-2 inch stroke, and working on a single three-throw crankshaft which is continuously driven. This compound three-cylinder gas engine has been very largely experimented with, and has always been regarded as unsuccessful. Fox now asserts that unquestionable brake tests prove the 47 per cent. gain in asserted fuel economy. If this is true, and it is possible to obtain such advantages by expanding the fired charge, then the gas engine can be made reversible, and can become as docile and responsive a motive agent as the steam engine, and it is not needful to use more than one gas engine cylinder to give constant torque on the crankshaft. From this standpoint, the Eisenhuth becomes the most interesting exhibit of this most interesting all-American automobile display.

This single Eisenhuth car has 112 inches wheelbase, wheels 36 inches diameter, 5-inch Diamond tires, 800 crankshaft r.p.m., motor 3 vertical cylinders, 6 1-2 inch stroke, 2 cylinders 7 1-4 inches diameter, one cylinder 12 inches diameter, weight of motor about 500 pounds. The price is $6,000.

Legal Rights and Liabilities.

BY CHAS. C. BARTON, JR.

(Concluded from Jan. 16.)

Law On the Road.

Our statutes provide that when persons meet on a bridge or way with carriages or other vehicles, each shall seasonably drive his vehicle to the right of the middle of the traveled part of such bridge or way and when a driver passes another vehicle going in the same direction he shall drive to the left of the middle. Until he meets a vehicle, however, he may drive upon either side of the street or any part of the street without thereby exposing himself to any liability. This was decided in a case where the plaintiff was driving on the left hand side of the street and was struck by a car. In other words, he was not guilty of contributory negligence.

Nor does the rule of keeping to the right apply where vehicles meet at the intersection of two streets. In such a case the rule is that each must use reasonable care to avoid a collision. I have already said that the violation of an ordinance or statute is not conclusive evidence of negligence. This applies to the law of the road. A pedestrian may cross a road or city street at any point and is not bound to wait until he reaches a regular crossing, but one so doing should exercise more caution than at a regular crossing.

Liability of City or Town for Defects in the Highway.

Under our statutes highways, streets and bridges shall be kept in repair at the expense of the city, town or place in which they are situated, when other provision is not made therefor, so that the same may be reasonably safe for travelers with their horses, teams, and *carriages* at all seasons of the year. It has been held by our Supreme Court, in Richardson *vs.* Danvers, 176 Mass., 413, that a bicycle is not a carriage, so that a person injured while riding a bicycle by reason of a defect in a highway cannot recover. The Court said:

"We have no doubt that for many purposes a bicycle may be considered a vehicle or a carriage. It way be lawfully used on the highway and is subject to the law of the road The statute in question was passed long before bicycles were invented and we are of opinion that it does not extend to bicycles. It seems to us that the Legislature, by the use of the word "carriage" had in view a vehicle which would carry passengers or inanimate matter. A bicycle is more properly a machine than a carriage and so it is defined. In subsequent acts to regulate the use of bicycles it is called a machine. A bicycle is of but little use in wet weather or on frozen ground. Its great value consists in the pneumatic tire; but this is easily punctured, and no one who uses a wheel thinks of taking a ride of any distance without having his kit of tools with him. A hard rut, a sharp stone, a bit of coal or glass, or a tack in the road may cause the tire to be punctured, and this may cause the rider to fall and sustain an injury. It may impose an intolerable burden upon towns to hold them bound to keep their roads in such a state of repair and smoothness that a bicycle could go over them with assured safety."

In another case, Rust *vs.* Essex, 182 Mass., 313, it was held that, "It is settled that those charged with the care of public ways are not required to attempt to keep them so smooth that a bicycle can go over them with assured safety, and that a road which is reasonably safe for travel of the ordinary kinds is not defective merely because not fit for use with bicycles."

I believe, however, that if the condition of the road is so notoriously defective that injury would be occasioned to a person on foot or riding in the kind of carriage included within the terms of the statute, the mere fact that a person was riding a bicycle will not prevent his recovery. Now, how far does this apply to automobiles? They are certainly machines, if a bicycle is, and certainly no one thinks of taking a ride of any distance without having his kit of tools with him. The puncturing of a tire may cause an accident. Probably it is safe to say that the road need not be kept in fit repair for the particular use of automobiles; that where the defect is such that the ordinary vehicle or carriage would sustain injuries, such as by caving in of the road or collapse of a bridge, the fact that the vehicle is an automobile will not prevent a recovery. A slight depression in the road which would slew the front wheels around and cause the machine to run into a telegraph pole could hardly be called a defect.

Liability for Negligent Acts of Chauffeur or Other Agent.

An owner of an automobile is personally liable for the negligent acts of his chauffeur or other person in his employ, committed by the owner's express authority, or committed in the usual course of the agent's employment though not authorized or participated in by the owner. This rule is based on public policy, it being held that it is more reasonable that where one of two innocent persons must suffer from the wrongful act of a third person, the principal who has placed the agent in the position of trust and confidence should suffer rather than a stranger. Every person is bound to use due care in his business and where that business is committed to an agent or servant the obligation is not changed. The negligence of the agent is the negligence of the principal. There is no necessity for discussing what is meant by the owner's express

authority. A chauffeur is told by the owner to proceed to a certain point or to pass a team on the road. If on so doing he is negligent and causes injury, the owner is liable. A more extended discussion might be given to the words "committed in the usual course of the agent's employment." There is usually in these cases not only no authorization to commit the wrong but in fact a violation of instructions. But neither of these elements exculpates the owner. Let us consider some illustrations: A chauffeur in returning from taking the owner to his office, negligently runs over a pedestrian; the driver of an automobile for hire negligently loses a trunk strapped on behind; a chauffeur is directed not to fire a steam carriage till it is repaired, he disobeys, the boiler explodes and a third person is injured; a chauffeur is directed never to exceed the speed law, he disobeys and in going around a corner negligently runs into a wagon; a chauffeur on his way home goes out of his way to accommodate a friend and negligently kills a pedestrian. In all the cases he is acting in the scope of his employment and the mere fact of disobedience of orders will not relieve the owner.

It is likewise immaterial that the chauffeur is acting temporarily for or under the immediate direction of another person. It has been held in this State that where a person hires a carriage with a driver and orders the driver to do some act which he does and does negligently, the person injured may look to the owner of the carriage and need not look to the person who gave the direction. The driver need not have done the act requested, because as to the manner of his driving and the control of his horse he remains subject to no orders but those of the man who pays him. Therefore, he can make no one else liable if he negligently runs down a person in the street.

It is true, of course, that a person admitted to be in the general employment of one, may be lent to another in such a way as to become the servant of that other for the occasion or for the time. They generally depend upon the nature of the contract or arrangement between the general master and the third person. For instance: a keeper of an automobile station may rent a machine and driver for the season, agreeing with the hirer that he shall pay the chauffeur, pay the running expenses, make the ordinary repairs and take the machine wherever he wishes. Under these circumstances, although the chauffeur and machine remain under the general management of the owner, there has been such a change in the relationship as to place the chauffeur under a new master who will be liable for negligence on the part of the chauffeur.

Returning to the consideration of what acts are within the general scope of the employment of the chauffeur, let us consider some which may not be within that scope. An owner goes on a week's hunting trip, giving his chauffeur a week's holiday; the latter takes the machine and invites a party of friends to go to the Brockton fair and negligently injures some one. If the owner allowed the chauffeur to take the machine for his own business or pleasure in which the owner had no interest; if the chauffeur was directed to be at Soldier's Field at 4 o'clock and arriving there too soon, and went to Allston to witness a fire, he was pursuing his own ends exclusively and as he was acting beyond the scope of his employment he is as much a stranger to his principal as though he were a third person.

The Speed Limit Law.

By Chapter 473, Sec. 8 of the Acts of the Legislature of 1903, the speed of automobiles is limited to ten miles an hour within a city or the thickly settled or business part of a town, and fifteen miles an hour outside of these districts. This power to regulate the speed of automobiles is one of the numerous police powers of the State, enacted for the public welfare and upheld by the courts as constitutional. It comes within the same class of cases as regulating the speed of electric cars, of requiring physicians and lawyers to pass State examinations as to their qualifications, requiring engineers to be licensed and requiring that milk sold to the public shall maintain a standard test.

After some experience in defending persons summoned into court for violation of the speed law, I am led to believe that unless there be exceptional circumstances, it is better and less expensive for the person haled into court to plead guilty rather than to plead not guilty and go through the form of a hearing when he has no real defense. An officer rarely makes an arrest unless he has timed the driver over a certain measured course. The usual answer on the part of the driver is that in his opinion he was not going as rapidly as alleged. This is poor evidence to contradict a stop-watch and ordinarily will not be accepted as of any value by the court. An experienced engineer of a train once testified that in his judgment his train was going twenty miles an hour while, as an matter of fact, at the time of the accident it was going forty miles an hour.

In these few remarks I have attempted to speak of those features of the law relating to automobiles and their owners which it seems have most bearing on the subject.

PUBLIC TEST OF THE GIBBS AUTO TRAIN.

An interesting demonstrationof a tractor-drawn road train was given by the Gibbs Engineering and Manufacturing Co. at its factory, Glendale, L. I., January 14.

A number of prominent automobilists, mining experts, engineers interested in the transportation of crude salts and ores and many representatives of the daily and automobile press were the guests of the company. The accommodations provided for the entertainment of the visitors included a special car and an elaborate luncheon, which was served in the commodious new factory after viewing the tractor and its train at work on the road.

THE GIBBS TRACTOR WITH TRAIN.

Speeches were made by T. H. P. Pell, vice-president of the Gibbs company; Henry Norman, M.P., of London, the well-known authority on international politics; W. E. Scarritt, president of the Automobile Club of America; C. E. Pickett, superintendent of the Pacific Borax Co., and Dr. Ledoux, the well-known mining engineer.

The test of the tractor and train was made under exceptionally trying conditions, the road available being rough and covered to the depth of a foot or more with slush and ice. Until a particularly bad stretch was encountered the novel sensation was experienced of riding in a freight

train over a common country road. It was the verdict of all who witnessed the demonstration that the Gibbs' tractor and train will prove a valuable factor in the development of our great southwest and other portions of the country as yet deficient in steam railroad facilities.

The Gibbs' train consists of an electrically-driven tractor and two or more trailers, the power plant for generating current being compactly arranged in the tractor and consisting of a three-cylinder, four-cycle vertical gasoline engine of 40-brake-horsepower direct coupled to a 30-kilowatt, 220-volt generator. Current is supplied to the two 6-horsepower series-, wound motors swung on the front axle of the tractor, and to the two 5-horsepower motors on each trail car through a controller located in the cab of the tractor. The trailers are driven through suitable reduction spur gears and chains to the rear wheels.

The three-cylinder engine is governed by automatic throttle on the intake; ignition by make-and-break touch spark. Cylinder dimensions are 7 by 10 inches and the engine is run at 400 to 450 revolutions. All bearings are heavy phosphor-bronze with lubrication by splash from the crank-case and compression grease cups for outside bearings. Inlet and outside valves are located side by side in the cylinder heads and both are mechanically actuated by a cam shaft driven by spiral gears from a vertical divided half-time shaft.

The valve actuating mechanism is enclosed in an oil-tight case, hinged to suitable lugs on the cylinder heads and by the removal of two nuts may be thrown back, giving ready access to all valves, the divided vertical half-time shaft being so designed that re-engagement of its separable clutch will ensure the correct timing of all valves. A small air compressor is driven by gears from the engine shaft and supplies air under pressure to start the engine.

Extensions of the engine shaft carry, at one end, the commutator of the generator and at the other, a fan to induce air circulation through a cylindrical nest of radiators. Water circulation is by a belt driven centrifugal pump. The water capacity is fifty gallons, ample for a full day's work under the most trying conditions. Thirty gallons of gasoline are carried and this supply can be augmented by supplementary tanks, there being sufficient room in the body of the tractor for twenty to fifty additional gallons.

The total weight of the tractor, with tanks full, a complement of tools and spares and lubricants is approximately six tons. The front or driving wheels are 36 inches in diameter, shod with 7-inch solid rubber tires. The steering wheels, controlled by a worm and gear actuated by a hand wheel in the cab, are 32 inches, wit 1 3 1-2-inch solid tires. Wheelbase, six feet; gauge, six feet.

The trailers are built on the lines of heavy horse-drawn trucks with through front axles which are fitted with fifth-wheels, the steering being accomplished by a short coupled shaft and distance chains extending from the axle to the point of attachment of the trailer to the tractor. The trail cars are fitted with solid steel-tired wood wheels, 38 inches in front and 56 inches rear, with 5-inch face. Weight of trailers, 2 1-2 tons each, with a capacity of ten tons of paying load. On an average country road a speed of four miles an hour can be readily maintained. The tractor and train which was exhibited has been sold to the Massey Station Mining Co., at Massey Station, Canada, and will be used for the transportation of ores and supplies.

A larger and more powerful equipment is being built for the Pacific Coast Borax Co., for use in hauling crude borax 125 miles across Death Valley in California. The tractor to draw the borax train will have a three-cylinder engine of 150 horsepower, with water tanks of 210 gallons and gasoline tanks of 165 gallons capacity. It is expected that this powerful tractor will supply current to drive seven or more trailers, which will be pressed steel side dumping cars, with air brakes operated from the cab.

Tramway Speed Attacked for Demonstration.

United States Consul Murat Halstead writes to the State Department from Birmingham, England, as follows:

"As a result of proceedings taken by Mr. R. Moffat Ford, a well-known automobilist and manufacturer, four drivers of electric street cars on the outskirts of London were fined 40s. ($9.72) each, with court costs, for exceeding their legal speed limit of ten miles an hour. 'Any legal authority,' Mr. Ford writes the London *Times*, 'is now empowered to proclaim that in the district under his control the highest speed at which a motor car is to be driven is ten miles an hour, or just about half as fast again as an athlete can walk.' It seemed to Mr. Ford that if he could show the local authorities in some practical fashion 'the absurdity of such a speed limit, they might hesitate to exercise the power put into their hands,' and that if he could compel the electric street-car riders to leave home a quarter of an hour earlier in the morning and have them arrive home a quarter of an hour later in the evening, because the street cars were compelled to travel within the speed limit provided for them—the utmost speed at which electric tram cars are permitted to travel in this country is twelve miles an hour—they might communicate the results of their observations to their representatives in powerful places.

"His point is that 'if the man in the street, and through him the county councilors, magistrate, and legislators, permits tram cars to run at twenty miles, he should in common sense allow motor cars to travel at thirty miles an hour and, conversely, if he restricts motor cars to ten miles an hour he should insist that tram cars should not travel over seven miles.' Mr. Ford's argument in favor of the motor car is that, weighing only 18 cwts. and provided with at least two sets of brakes, it can not only stop quickly in much shorter space than an electric car, but can steer clear of danger, while an electric street car weighs 14 tons and has only one way of avoiding danger—that is, by using its brakes. 'Supposing each vehicle to be driven by a driver of average intelligence,' he asks, 'upon which vehicle would it be sensible to impose the more stringent speed regulations? And yet for several years past motor cars have been unceasingly harassed in the manner I have described, while tram cars have been permitted by the authorities to travel at double their legal rate with impunity.'"

TWO VERSIONS OF A REMARKABLE ACCIDENT IN LOS ANGELES.

Below are printed two accounts of the accident shown in the photograph reproduced. Both come from reliable persons in Los Angeles. The apparent discrepancies reflect the great difficulty that nearly always surrounds the gathering of the facts regarding an accident or disaster, which even the victims themselves see in different lights, and offers a practical explanation of why THE AUTOMOBILE usually refrains from publishing the stories of automobile accidents.

LOS ANGELES, Jan. 12.—An accident which came near having a fatal termination occurred on Sunday, January 10, on the road leading from Pasadena to Los Angeles. A new Columbia car, weighing 3,000 pounds, driven by W. G. Pearson, a professional chauffeur, and having as occupants W. O. Holcomb and Tom Pillow, a colored chauffeur of Pasadena, was headed toward Los Angeles after an exciting run from Pomona to Pasadena, a distance of thirty-two miles, which was made in one hour flat, the best former time being 1 hour 17 minutes.

On attempting to cross Columbus Bridge, which requires a sharp turn, the left rear wheel got a firm hold on the flooring and the right rear wheel stuck for a second or so in a chuck hole, which sent the forward wheels crushing in to the bridge fence and down. The radiator and one wheel held on the projecting rise of sand below the bridge. While this was happening, Pearson disengaged the clutch and was pitched over the steering wheel, catching with his hands on the top of the fence, as shown in the photograph. Holcomb and Pillow were thrown some thirty feet or so, one landing on the sand below and the other on a railroad track. All escaped with a few slight bruises.

After the machine was landed back on the bridge, the unterrified occupants got aboard and the $5,000 car was driven home to Los Angeles by Mr. Pearson on her

REMARKABLE BRIDGE ACCIDENT AT LOS ANGELES, CAL.

own power. At the present time she is being overhauled, and from what can now be seen has suffered less than $25 damage.

Mr. Pearson, speaking of his high dive, declared that if blame is placed anywhere it should be on his shoulders, for (to use his on expression) "bum driving," as in no case was the machine at fault.

Mr. Pearson hereabouts is regarded as an expert driver, and in some five years' experience in demonstrating with different makes of cars has never before had an accident.

Los Angeles, Jan. 12.—A most remarkable escape from sudden death happened to three occupants of one of the new big 26-horsepower Columbia touring cars on the Raymond bridge between Los Angeles and Pasadena yesterday morning.

J. W. Pearson, a professional chauffeur and demonstrator for the West Coast Autocar Company, Los Angeles; Tom Pillow, a colored chauffeur of Pasadena, and E. Holcomb were in the car. They had driven to Pasadena and thence to Pomona on a demonstrating trip, and were returning down Fair Oaks Avenue when the accident as shown in the illustration took place.

The Raymond bridge spans the Santa Fe and Salt Lake Railroad tracks and also the abandoned California Cycleway at the foot of Hotel Raymond Hill. It is about sixty feet long and twenty-five feet wide. To turn onto the bridge from Fair Oaks Avenue requires a sharp turn at right angles, and the approach is so raised from the grading of the old electric line that it requires considerable speed to make it.

Exactly what happened to cause the accident neither the few spectators nor the occupants of the car are able to clearly explain, but the jolt incident to the approach probably so swerved the steering wheel that Pearson could not recover in time to save the crash. Pearson saw what was coming and jumped from the machine, catching hold of the bridge; Pillow was thrown out over the front onto a bank of dirt and onto the railroad tracks thirty feet below, but picked himself up unhurt; Holcomb, who was in the rear seat, was shot over the bridge and down beside Pillow. He was thought to be killed, but was simply dazed, and took a car back to Los Angeles.

What probably saved all from instant death was a wall of earth some fifteen feet thick that reached up to within seven feet of the bridge, and when the car dashed through the side of the bridge, tearing away the railing, the front wheels dropped into this little embankment, leaving the rear wheels clinging to the rim of the bridge. It was this sudden impact with the embankment that hurled the occupants from the car, and also saved their lives, as it prevented the heavy machine from falling on them.

J. W. Pearson, who was driving the car frankly admits that he hasn't the slightest idea how the accident occurred.

"First of all," he said, "I don't want to appear as if I were shifting the blame. If it was bad driving that caused it, I am willing to stand for it, as I ought to. I was coming down the hill at a very moderate speed—about twelve miles an hour—and had the machine only opened to the first notch. When I swerved onto the bridge, the entire front truck skidded as if it were on ice. It was all done in a second, and the next instant we were against the railing, through, and lying variously in the wreck or on the ground."

The big machine was extricated by a house-mover, and, outside of a little damage to the starting crank, fender and cooler, it was apparently uninjured. Pearson drove the machine to Los Angeles.

Dorothy Levitt, Foremost Woman Motorist.

Miss Dorothy Levitt stands out prominently in the English automobile world, for although she has participated in motor events for only one season—the last—yet she soon made her way to the front and her popularity was amply testified by the manner in which she was greeted by the spectators during the late reliability trials of the Automobile Club of Great Britain.

It was Selwyn F. Sage, of Napier fame, who first recognized Miss Levitt's abilities, and it was one of his employees who gave her her first lesson at Hampton Court. After carefully watching her instructor for some time, Miss Levitt seated herself at the steering wheel and drove the car back to Regent Street, through all the dense traffic of London's busy thoroughfares. And from that day on she has devoted herself to motoring on land and water.

Her first public appearance was in the Glasgow to London non-stop run, early last May, in which she did very well indeed, although she was physically hardly fit for such an undertaking, as she was just recovering from the effects of a collision with a small cart. Miss Levitt, it may be stated here, took the matter into court and was awarded $175 damages, this being the first case of its kind won by a motorist. Other noteworthy rides of Miss Levitt's were in the reliability trials and at the Southport speed trials, where she won a first prize in Class G—a lovely silver bowl. But dearly as she loves motoring on land, she, nevertheless, prefers to drive a motor launch, and the present year will give her several opportunities to indulge in this favorite branch of the pastime.

(*Continued on Page 117.*)

Directory of Automobile Clubs and Trade Associations

REVISED TO DATE.

* Indicates that replies have not been received to letters asking for information. In the interest of completeness and accuracy officers of new clubs not included in this Directory, but which have a formal organization, are invited to send club name, list of officers, and address of secretary. Reports of club elections, club news of general interest, and corrections are especially requested

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Dorothy Levitt.

(*Continued from page 115*)

The first time Miss Levitt entered into competition on a launch was at Cowes, Isle of Wight, where she attained a signal victory and was presented to the King by special request. His Majesty engaged his plucky young subject in conversation and complimented her on the veteran manner in which she, although a novice, had steered her boat to victory in a contest for which far more experienced hands had entered. And then the Gaston-Menier Cup, one of the "blue ribbons" of the season, fell to her lot at Trouville, France.

None of the spectators will ever forget the almost weird impression the spectacle of this young girl at the wheel made upon them. The boat responded faithfully to every touch of its driver's hand and it was a remarkable sight to watch the *Napier* outstrip all opponents and come home a clear two hundred meters ahead of its most dangerous competitor, the *Mercedes*. Rounds on rounds of applause greeted her on her remarkable victory, and M. Deutsch de la Meurthe was so charmed with the launch that he bought it immediately after the race. The *Napier* competes at Monaco next month, and it is more than likely that Miss Levitt will again be at the helm, as M. Deutsch has already approached her on this subject.

"I personally prefer steering a really fast petrol launch to anything else in this world," said Miss Levitt in her pretty drawing-room in Kensington, London. "It is full of such eerie and yet wildly fascinating sensations. Even all the discomforts experienced during a race—and I can assure you they are not trifling ones at the time—are more than amply counterbalanced by the sense of mastery over a fierce and hungry element. And the intense desire to fulfil the trust placed in you absolutely stultifies all personal feelings. Then the past always throws a glamor over all happenings, and I can assure you I am more than willing to undergo it all again for the excellent and exhilarating sport it affords. Of course it was rather difficult at first to keep one's balance and to stand firmly in a space of about half a yard square, with the pleasing prospect of probably coming into contact with a heated engine should I sway too much. Besides, having to stand up to steer, I was subjected to a great deal of veering about by the waves, which hit very hard sometimes. They added to the motion of the boat, made it a hard task at first for me to keep on my feet, but, like everything else, I quickly grew accustomed to this feeling and soon "found myself."

"One of the greatest drawbacks was that, except with an unusually calm sea, I was saturated with the water which literally poured down my back. It was also extremely difficult to discern any floating objects, such as timber, seaweed, etc., which all had to be dodged, owing to the clouds of spray that arose around me all the time. According to the onlookers, the boat from afar looked like a huge black-bodied bird with two enormous white wings flashing in the air—the waves formed by the action of the launch.

"I shall spend a great part of this year on the Continent; I am booked up till October. I am going to steer a boat at the Nice races and think of entering for the Paris-Rome tour as well. O, there will be plenty to do and I absolutely love the life. I am never happy unless I am on my car and can feel a rush of fresh air. I drive a 12-horsepower Gladiator at present, but I think I shall change back to my Napier again. No, I never take a mechanician with me; I attend to my cars myself and have taken a course of practical instruction at the works. I am never done learning; there is always something new to be added to my store of knowledge, and I believe in being absolutely self-reliant."

Best Toledo-St. Louis Route Wanted.

Editor THE AUTOMOBILE:

Will you kindly advise me if there is a better or shorter route between Toledo and St. Louis, than the one taken by the Wabash railroad? I intend to make the trip in my car and am anxious to know if I followed the Wabash as near as possible if it would not be shortest and best.

GEORGE R. FORD.

Toledo, Jan. 12.

We shall be pleased to receive replies to Mr. Ford's inquiry from other readers.—ED.

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THE AUTOMOBILE

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SATURDAY, JANUARY 23, 1904.

SHOW TIME.

So long as manufacturers wait for the New York show before they will decide upon the details of design and styles for their product, and so long as the public hold back their orders until they have looked the show over, it will be practically impossible to assure deliveries of automobiles at the time when the majority of customers want them, viz., in March or April.

This is the one feature of a January exhibition which more than one voice at the show now in progress denounce as injudicious, from the viewpoints of the public and the established industry alike. Either earlier or later would be the proper time, and opinions differ diametrically as to which is better. November appeals to several manufacturers who realize the great factory economy that may be effected when the demand for the new year may be gauged well in advance in regard to quantity as well as styles. Others maintain that the maker may as well decide for himself how many cars it will be safe and profitable for him to produce and so order his business that he will be able to provide almost immediate deliveries after a spring show. They argue that, after all, the popular preferences manifested at a show are subject to profound changes at almost any time, so that dependence upon such preferences is always more or less precarious. This faction, composed perhaps largely of the "small" manufacturers, is inclined to favor a March show or even an outdoor show and encampment combined in May.

NEW AUTOMOBILE BILL.

One of the most important events of this week, already replete with general interest in the New York show, is the introduction of a new bill in the Legislature at Albany intended not only to take the place of the Bailey law with its recently proposed amendments, but to serve also as a prototype for identical bills to be introduced in all other States with a view to national uniformity in automobile traffic regulation. This bill which has been compiled after a comparative study of the existing legislation in a number of States and foreign countries, is printed on another page, and careful persual of its provisions by our critical readers, followed by such action and recommendations as they may deem expedient, may do a great deal to shape the future of automobilism in this country. It is understood that Mr. Hotchkiss, formerly president of the Buffalo Automobile Club, where he rendered va uable local service, and now president of the New York State Association of Automobile Clubs, has been largely instrumental in framing the new measure and placing it before the Legislature at this opportune moment; earlier than it was thought possible to accomplish a so important and complicated task. While we have not yet been able to become sufficiently familiar with the new bill to express an opinion on its merits as a document containing the permanent standards for right and wrong in automobile traffic matters, it may perhaps be taken for granted that it corresponds more nearly to the needs of the whole population of New York State than the Bailey law, even though the author of the latter professes the utmost regard for the rights of motorists.

GOOD ROADS.

The most energetic agitation for the Brownlow and almost identical Latimer bills, now before the House of Representatives and the Senate, is carried on. It includes the broadcast dissemination of printed matter intended to help editors to write editorials on the subject. One of these suggested "editorials," made in Washington is good enough, considering the laudible object, to be reproduced here. It reads as follows:

"Next to Panama and the canals, the subject of good roads appears to be the leading question before Congress this winter. In fact the Panama question had to stand aside while Senator Latimer made a speech on his good roads bill. He is the junior senator from South Carolina, and an enthusiastic supporter of the Government aid proposition. The scheme outlined in his bill is very similar to that of the Brownlow bill. Each bill carries an appropriation of $24,000,000 to be used during the next three years, and each provides that the Federal Government may aid in the improvement of the roads to the extent of one-half the expense; but the Latimer bill places three commissioners in charge of the proposed Bureau of Highways instead of one director.

Senator Latimer's speech was clear and convincing. He discussed the question along the usual lines. He answered the charge of "unconstitutionality" by citing the fact that Congress had appropriated and the Government had spent many millions for road-building in the early part of the last century. He also pointed out that the Government continually uses the public roads as postroads and argued that it was not only constitutional but just that it should help construct and maintain them.

The South Carolina Senator summarized the arguments for National aid as follows:

FIRST. The history of road-building demonstrated that a complete system of public roads has never been constructed in any country except by the aid of the general Government.

SECOND. The revenues of the Government are raised largely upon articles consumed by all of the people, thereby distributing taxation equally, and as all the people could contribute to the construction and improvement of the roads, it is only by Federal aid that this can be accomplished.

THIRD. It is the duty of the Federal Government to bear its just proportion of the expense for the construction and improvement of the roads which it uses for the delivery of the mails and for military purposes in time of war.

FOURTH. Better roads are a national necessity; they closely concern the general welfare of the nation, and are therefore a proper object of National aid.

FIFTH. A surplus of about $200,000,000 is lying idle in the Treasury, which belongs to the people and should be expended for their benefit in a manner which will accomplish the greatest good to the largest number.

AUTOMOBILE ENGINEERS' SOCIETY.

As will be noticed in our news columns, an association of automobile engineers has finally been formed in New York, and the science or art of automobile building has thereby entered upon a new stage, contingently, of course, upon the activity to be displayed by the new association. It cannot have escaped the attention of manufacturers that a large amount of valuable information and suggestive thoughts have emanated from societies of similar scope in great Britain and France. The technical committee of the

Automobile Club de France, which holds a similar position, has been instrumental in arranging a large number of motor tests which have proved the main source of correct information on subjects bearing vitally on good construction and durability of automobiles and has coöperated with the ministry of agriculture and commerce in France for ascertaining the possibilities of alcohol as a fuel. A large number of subjects of similar general character are undoubtedly open for fruitful investigation by the American Association of Automobile Engineers, henceforth a regular subdivision of the American Society of Mechanical Engineers. It is to be hoped that the commercialism which has so far somewhat retarded the stride of independent automobile construction, adapted for the great variety of specially American requirements of self-propelled vehicles, will be subdued in all the efforts which the new association will put forth, so that perfect confidence may be built up in the reliability of the data—that much abused word—which the association undoubtedly will collect for the guidance of its members and the industry in general. If the association will do only one-third of the work which comes within its legitimate scope, the public has ample reason for feeling highly satisfied that the automobile engineers have at last taken the first step for scientific coöperation in a field where each individual singly can do only a very small part of the investigating of which everybody feels the necessity.

AUTOMOBILE ENGINEERS COME TOGETHER AND FORM SOCIETY.

The Society of Automobile Engineers is the title of an organization completed at a meeting held in the Hotel Navarre, January 18. It is the purpose of the society to hold frequent meetings for the interchange of ideas and knowledge in automobile construction, and, at quarterly meetings, to have papers read which will form the subject of discussion.

Two classes of members are provided for—active, who must be actual engineers; and associate, who may be persons connected with automobile construction.

The following officers were elected: President, A. L. Riker, Bridgeport, Conn.; first vice-president, Henry Ford, Detroit, Mich.; second vice-president, John Wilkinson, Syracuse, N. Y.; secretary and treasurer, E. T. Birdsall, New York City.

The following membership committee will pass upon applications: A H. Whiting, chairman; A. L. Riker, L. J. Gibbs, and E. I. Birdsall.

A resolution has been introduced in the Assembly at Albany favoring the passage by Congress of the Brownlow bill for the appropriation of $24,000,000 for road improvement.

Hotchkiss' Bill in New York Legislature.

ALBANY, Jan. 19.—Senator Hill introduced in the Senate Monday night the proposed new automobile law which has been prepared by the legislative committee of the New York State Automobile Association. It was not referred at once as there was a difference of opinion as to whether it should go to the committee on Codes, Internal Affairs, or Roads and Bridges, and it was laid aside for a time.

The bill in full is as follows, and incorporated is the report of the Committee on Legislation of the New York State Automobile Association on motor vehicle laws of the different States and countries, and is offered as a substitute for all exisitng automobile regulations in New York State:

An Act in relation to the registration and identification of motor vehicles and the use of the public highways by such vehicles.

The People of the State of New York, represented in Senate and Assembly, do enact as follows:

SECTION 1.

Subdivision 1.—Short Title.

The short title of this act shall be the "Motor Vehicle Law." Except as otherwise herein provided, it shall be controlling, (1) upon the registration and numbering of motor vehicles, (2) on their use of the public highways, and (3) on the penalties for the violation of any of the provisions of this act.

Subdivision 2.—Definitions.

The words and phrases used in this act shall, for the purposes of this act, unless the same be contrary to or inconsistent with the context, be construed as follows: (1) "Motor vehicle" shall include all vehicles propelled by any power other than muscular power, excepting such motor vehicles as run only upon rails or tracks, provided that nothing herein contained shall apply to traction engines or road rollers; (2) "Public highways" shall include any highway, country road, state road, public street, avenue, alley, park, parkway, driveway or place in any city, village or town; (3) "closely built up portions" shall mean, (a) the territory of a city or village contiguous to a public highway devoted to business, and also (b) the territory of a city, village or town contiguous to a public highway not devoted to business, where for not less than one-fourth of a mile the dwelling houses on such highway average less than one hundred feet apart; (4) "local authorities" shall include all officers of counties, boroughs, cities, villages or towns, as well as all boards, committees and other public officials of such counties, boroughs, cities, villages or towns.

SECTION 2.

Subdivision 1.—Filing Statement.

Every owner of a motor vehicle shall, for every vehicle owned by him, file in the office of the secretary of state a statement of his name and address, with a brief description of the vehicle to be registered, on a blank to be prepared and furnished by such secretary for that purpose. The filing fee shall be $2.

Subdivision 2.—Registration and Record.

The secretary of state shall thereupon file such statement in his office, register such motor vehicle in a book to be kept for that purpose, and assign it a number, beginning with the number 1 and so on in the order of such filing.

Subdivision 3.—New Owners.

Every person hereafter acquiring a motor vehicle shall file a like statement with the secretary of state and such secretary shall, in like manner, file such statement, register such vehicle and assign it a number. If the vehicle has previously been registered, such fact and the number assigned it shall be set forth in the statement, and the previous registration shall be cancelled; but the number of such previous registration may be assigned under the new registration. Subject to the provisions of subdivision six of this section, upon the sale of a motor vehicle, the vendor shall, within five days, return to the secretary of state the registration seal affixed to such vehicle, with notice of the sale and of the name, place of residence and address of the vendee.

Subdivision 4.—Registration Seal.

The secretary of state shall forthwith on such registration, and without other fee, issue and deliver to the owner of such motor vehicle a seal of aluminum or other suitable metal, which shall be circular in form, not over two inches in diameter, and have stamped therein the words "Registered in the office of the secretary of state for the state of New York, under the Motor Vehicle Law, No. —," with the registration number inserted therein; which seal shall thereafter at all times be conspicuously displayed on the motor vehicle, to which such number has been assigned.

Subdivision 5.—Display of Registration Number.

Every motor vehicle shall also at all times have the number assigned to it by the secretary of state displayed on the back of such vehicle in such manner as to be plainly visible, the numbers to be in Arabic numerals, black on white ground, each not less than three inches in height, and each stroke to be of a width not less than half an inch, and also as a part of such number the initial letters of the state in black on white ground, such letters to be not less than one inch in height.

Subdivision 6.—Registration by Manufacturers or Dealers.

A manufacturer of or dealer in motor vehicles shall register one vehicle of each style or type manufactured or dealt in by him, and be entitled to as many duplicate registration seals for each type or style so manufactured or dealt in, as he may desire on payment of an additional fee of fifty cents for each duplicate seal. If a registration seal and the corresponding number shall thereafter be affixed to and displayed on every vehicle of such type or style as in this section provided, while such vehicle is being operated on the public highways, it shall be deemed a sufficient compliance with subdivisions one, four, five and eight of this section, until such vehicle shall be sold or let for hire. Nothing in this subdivision shall be construed to apply to a motor vehicle employed by a manufacturer or dealer for private use or for hire. Nor shall a manufacturer or dealer be obliged to observe subdivision three of this section, provided that, on the sale of any motor vehicle within the terms of this subdivision of this section, he shall remove the registration seal therefrom.

Subdivision 7.—Fictitious Seal or Number.

No motor vehicle shall be used or operated upon the public highways after thirty days after this act takes effect which shall display thereon a registration seal or number belonging to any other vehicle, or a fictitious registration seal or number.

Subdivision 8.—Unregistered Vehicle not to be Operated.

No motor vehicle shall be used or operated upon the public highways after thirty days after this act takes effect, unless the owner shall have complied in all respects with this section.

Subdivision 9.—Exemption of Non-resident Owners.

The provisions of this section shall not apply to motor vehicles owned by non-residents of this state, provided the owners thereof have complied with any law requiring the registration of owners of motor vehicles in force in the state, territory or federal district of their residence, and the registration number showing the initial of such state, territory or federal district shall be displayed on such vehicle substantially as in this section provided.

SECTION 3.

Subdivision 1.—Speed Permitted.

No person shall operate a motor vehicle on a public highway at a rate of speed greater than is reasonable and proper, having regard to the traffic and use of the highway, or so as to endanger the life or limb of any person, or in any event in the closely built up portions of a city, village or town, at a greater rate than one mile in six minutes or elsewhere in a city or village at a greater rate than one mile in four minutes, or elsewhere outside of a city or village at a greater rate than one mile in three minutes; subject, however, to the other provisions of this section.

Subdivision 2.—Speed at Crossings, etc.

Upon approaching a crossing or intersecting public highways, or a bridge, or a sharp curve, or a steep descent, and also in traversing such crossing, bridge, curve or descent, a person operating a motor vehicle shall have it under control and operate it at a rate of speed less than hereinbefore specified, and in no event greater than is reasonable and proper, having regard to the traffic then on such highway and the safety of the public.

Subdivision 3.—Meeting Horses, etc.

Upon approaching a person walking in the roadway of a public highway, or a horse or horses, or other draft animals, being ridden or driven thereon, a person operating a motor vehicle shall give warning of its approach by signalling with a horn, bell or other device, and use every reasonable precaution to ensure the safety of such person or animal, and, in the case of horses or other draft animals, to prevent frightening the same, and at once reduce the speed at which such vehicle is being operated, and, if such horses or other draft animals appear frightened, to not more than one half the speed permitted by subdivision one of this section.

Subdivision 4.—Stopping on Signal.

A person operating a motor vehicle shall, at request or on signal by putting up the hand, from a person riding or driving a restive horse or horses or other draft animals, bring such motor vehicle immediately to a stop, and, if traveling in the opposite direction, remain stationary so long as may be reasonable to allow such horses or animals to pass, and, if traveling in the same direction, use reasonable caution in thereafter passing such horse or animal; provided that in case such horse or animal appears badly frightened or he is requested so to do, the person operating such motor vehicle shall cause the motor of such vehicle to cease running so long as shall be reasonably necessary to prevent accident, and insure the safety of others.

Subdivision 5.—Giving Name and Address.

In case of accident on the public highway, due to the operation thereon of a motor vehicle, the person operating such vehicle, shall, upon request, of a person injured, or one representing him, give such person his name and address and, if not the owner, the name and address of such owner.

Subdivision 6.—Speed Tests and Races.

Local authorities may, notwithstanding the other provisions of this section, set aside for a given time a specified public highway for speed tests or races, to be conducted under proper restrictions for the safety of the public.

SECTION 4.

Subdivision 1.—Rules of the Road.

Whenever a person operating a motor vehicle shall meet on a public highway any other person riding or driving a horse or horses or other draft animals or any other vehicle, the person so operating such motor vehicle shall seasonably turn the same to the right of the center of such highway so as to pass without interference. Any such person so operating a motor vehicle shall, on overtaking any such horse, draft animal or other vehicle, pass on the left side thereof, and the rider or driver of such horse, draft animal or other vehicle shall, as soon as practicable, turn to the right so as to allow free passage on the left. Any such person so operating a motor vehicle shall at the intersection of public highways, keep to the right of the intersection of the centers of such highways when turning to the right and pass to the right of such intersection when turning to the left. Nothing in this subdivision shall, however, be construed as limiting the meaning or effect of the provisions of section three of this act.

Subdivision 2.—Brakes, Lamps, Horn, etc.

Every motor vehicle while in use on a public highway shall be provided with good and efficient brakes, and also with a suitable bell, horn or other signal, and be so constructed as to exhibit, during the period from one hour after sunset to one hour before sunrise, two lamps showing white lights visible within a reasonable distance in the direction toward which such vehicle is proceeding, and also a red light visible in the reverse direction.

Subdivision 3.—Local Ordinances Prohibited.

Subject to the provisions of subdivision four of this section, local authorities shall have no power to pass, enforce or maintain any ordinance, rule or regulation requiring of any owner or operator of a motor vehicle any license or permit to use the public highways, or excluding or prohibiting any motor vehicle whose owner has complied with section two of this act from the free use of such highway, except such driveway, speedway or road as has been or may be expressly set apart by law for the exclusive use of horses and light carriages, or, except as herein provided, in any way affecting the registration or numbering of motor vehicles or the speed at which they may be operated, or their use of the public highways, contrary to or inconsistent with the provisions of this act; and all such ordinances, rules or regulations now in force are hereby declared to be of no validity or effect; provided that nothing in this act contained shall be construed as limiting the power of local authorities to make, enforce and maintain ordinances, rules or regulations, in addition to the provisions of this act, affecting motor vehicles which are offered to the public for hire.

Subdivision 4.—Parks and Parkways Excepted.

Local authorities may, notwithstanding the provisions of section three of this act, make, enforce and maintain such reasonable ordinances, rules or regulations concerning the speed at which motor vehicles may be operated in any parks or parkways within a city, but, in that event, must, by signs at each entrance of such park and along such parkway, conspicuously indicate the rate of speed permitted or required.

Subdivision 5.—Application to Motor Cycles.

This act shall apply to motor vehicles commonly known as motor cycles, provided that such vehicles shall not be required to affix registration numbers the size of the Arabic numerals of which shall be more than two inches in height or the stroke of which numerals shall be of a width more than one quarter of an inch, or to exhibit, during the period specified in subdivision two of this section, more than one lamp showing a white light visible to the front, or any red light visible in the reverse direction.

Subdivision 6.—No Effect on Right to Damages.

Nothing in this act shall be construed to curtail or abridge the right of any person to prosecute a civil, action for damages by reason of injuries to person or property resulting from the negligent use of the highways by a motor vehicle or its owner or his employee or agent.

SECTION 5.

Subdivision 1.—Penalties for Excessive Speed, etc.

The violation of any of the provisions of subdivision five of section two, or of subdivision seven of section two, or of section three of this act, or of any ordinance, rule or regulation adopted by local authorities in pursuance of subdivision four of section four of this act, shall be deemed a misdemeanor, punishable by a fine not exceeding fifty dollars for the first offense, and punishable by a fine of not less than fifty dollars nor more than one hundred dollars, or imprisonment not exceeding thirty days, or both, for a second offense and punishable by a fine of not less than one hundred dollars nor more than two hundred and fifty dollars and imprisonment not exceeding thirty days for a third or subsequent offense.

Subdivision 2.—Penalties for Other Violations.

The violation of any other provision of this act shall be punished by a fine not exceeding twenty-five dollars for the first offense, a fine of not less than twenty-five dollars nor more than fifty dollars for a second offense, and a fine not less than fifty dollars nor more than one hundred dollars, or imprisonment not exceeding ten days, or both, for a third or subsequent offense.

Subdivision 3.—Release from Custody, Bail, etc.

In case the owner of a motor vehicle shall be taken into custody because of a violation of any provision of this act, he shall be forthwith taken before an accessible captain or sergeant or acting sergeant of police in any city or village, or any justice of the peace or magistrate, and be entitled to an immediate hearing; and if such hearing cannot then be had, be released from custody on giving his personal undertaking to appear in answer for such violation, at such time and place as shall then be indicated, secured by the deposit of a sum equal to the maximum fine for the offense with which he is charged, or in lieu thereof, by leaving the motor vehicle being operated by such person, with such officer; or, in case such officer is not accessible, be forthwith released from custody on giving his name and address to the officer making such arrest and depositing with such officer a sum equal to the maximum fine for the offense for which such arrest is made, or in lieu thereof, by leaving the motor vehicle, being operated by such person, with such officer; provided that in such case the officer making such arrest shall give a receipt in writing for such sum or vehicle and notify such person to appear before the most accessible magistrate, naming him, on that or the following day, specifying the place and hour. In case security shall be deposited, as in this subdivision provided, it shall be returned to the person depositing, forthwith on such person being admitted to bail as provided in section five hundred and fifty-four of the Code of Criminal Procedure, and the return of any receipt or other voucher given at the time of such deposit. In case such undertaking with security or such deposit shall not be made by an owner so taken into custody, the provisions of section five hundred and fifty-four of the Code of Criminal Procedure shall apply.

SECTION 6.—*Acts Repealed.*

All acts and parts of acts inconsistent herewith or contrary hereto are, so far as they are inconsistent or contrary, hereby repealed.

SECTION 7.—*When this Act Takes Effect.*

This act shall take effect immediately, except that no penalty shall be asserted or imposed for the violation of any of the provisions of section two hereof committed prior to thirty days after this act takes effect.

In addition to the bill just proposed, it will be necessary to pass two other bills, as follows:

(1) A bill to repeal sections 166, 167, 168, 169, 169-a and 169-b of the highway law, which are the so-called automobile additions to that law, and to amend section 163 of that law back to the condition in which it was before the numerous clauses referring to automobiles were added thereto;

(2) A bill to amend section 666 of the Penal Code, by striking out all penalties therein having reference to the use of automobiles.

Bills to accomplish these objects were introduced with the principal bill.

Proposed San Francisco Auto Law.

SAN FRANCISCO, Jan. 11.—At the last regular meeting of the Board of Park Commissioners of San Francisco, Reuben H. Lloyd submitted an ordinance designating the roads open to automobiles and regulating the speed of motor cars in Golden Gate Park. The first section of the proposed ordinance excludes horseless carriages, motor wagons, automobiles and motor-bicycles "from all avenues, driveways or parts of any park in the city and county of San Francisco except the driveway leading from the Water Street entrance of Golden Gate Park to the Great Highway, commonly known as the Ocean Boulevard, the Central or Overlook Drive, and certain designated portions of the Great Highway. The second section limits the speed to ten miles an hour on said driveways and to eight miles when rounding the curves; and on certain portions of the Great Highway to six miles. On those portions of the Great Highway it requires the use of mufflers. The third section provides punishment by imprisonment for not more than six

months, or by a fine of not less than $50 nor more than $500, or both, for infractions.

New York Automobile Licenses.

Below is given the total number of automobile licenses issued by the Secretary of State in New York State up to the first of every month since April 26, 1901:

Year.	Month.	Licenses Issued.
1901	April 26	1
"	May 1	11
"	June 1	291
"	July 1	505
"	August 1	623
"	September 3	719
"	October 2	801
"	November 2	866
"	December 2	918
1902	January 2	955
"	February 3	997
"	March 2	1,020
"	April 1	1,083
"	May 1	1,257
"	June 2	1,429
"	July 2	1,606
"	August 1	1,729
"	September 2	1,813
"	October 2	1,889
"	November 1	1,953
"	December 2	1,997
1903	January 2	2,037
"	February 3	2,062
"	March 2	2,088
"	April 1	2,143
"	May 1	2,294
"	June 1	3,000
"	July 1	5,956
"	August 1	7,292
"	September 1	7,878
"	October 1	8,291
"	November 2	8,613
"	December 1	8,767
"	January 1	8,835

MASSACHUSETTS ROAD COMMISSIONERS CONSIDER NATIONAL AID BILL.

BOSTON, Jan. 17.—Ex-President A. R. Shattuck of the Automobile Club of America recently sent a letter to Chairman William E. McClintock of the Massachusetts Highway Commission urging that the Massachusetts good roads authorities do all in their power to further the passage of the good roads bills introduced in the houses of Congress by Representative Brownlow and Senator Gallinger. Mr. Shattuck announced that quantities of printed matter were being sent out by automobilists and others interested in good roads, and incidentally remarked that national aid would be a good thing for Massachusetts, because, under its provisions, government funds available for Massachusetts roads would amount to something like $813,000 in three years.

But Massachusetts roads are being improved in short sections all over the State, instead of in long stretches in a particular part. This system is prescribed by the State law in order that each county shall benefit and none be specially favored. If the Brownlow bill should go through in its present form it would virtually do away with the Massachusetts system, including the present State commission. The Massachusetts commissioners are not opposed to the main idea of the bill, but they believe Massachusetts could gain more by some system of national aid that would not nullify the power of the State board to attend to the actual work on the roads, as it does now; particularly since under the present State law the Highway Commission not only surveys and lets contracts to build the roads, but attends to the maintenance; whereas the Brownlow bill gives the work into the hands of a Washington bureau and trusts to promise-bound towns and counties to keep up the improved roads.

FLORIDA TOURNAMENT PLANS COMPLETED AND ENTRY LIST CLOSED.

A large number of show attendants and visitors will leave New York the last of this week and early next week for Florida to attend the racing and record-breaking tournament on the Ormond-Daytona beach. The Florida East Coast Automobile Association has decided to start the races on Thursday, January 28, to allow visitors to take advantage of the Seaboard Air Line Railroad's Florida excursion which leaves Boston on January 25 and New York at 8 a. m., January 26, and stop over a day in Washington, arriving at Ormond on the night of the 28th. Wednesday, January 27, will be devoted to record trials.

Thomas Cook & Son will run personally conducted excursions from Boston and New York on January 22 and 23 that will enable tourists to reach Ormond and Daytona in ample season to see the first day's racing.

Among the entries for the races, which are appended, is one of the novelties of the season—the Christie touring car, built by Walter Christie of the Christie Iron Works of New York. This is said to have done a measured straightaway mile, with several passengers aboard, in 55 2-5 seconds. It is a 35-hp. car, weighing 1250 pounds. It is a front drive, front steering machine, having a vertical four-cylinder motor mounted in alignment with the front wheel axles, the crankshaft taking the place of the front axle and driving the wheels direct through sliding universal joints in the hubs.

The entry of Lamberjack, the famous French chauffeur, which was rejected by the New York representative of the Florida East Coast A. A., has been accepted, the racing board of the A. A. A. upholding the protest of Paul Lacroix, who is representing A. Clément in the matter. The 60-horsepower, 1,800 pound Clément racing car arrived on the *Bretagne*, January 19, and, after passing through the customs, was immediately shipped to Florida.

The performance of the machine will be watched with much interest, as it is one of the first high-powered cars to come through the Clément works and indicates the policy of the company to produce machines which will rightly rank with the racing voitures legéres of Mors, Panhard et Levassor, De Dietrich, and others.

Entries for the Florida tournament, beginning January 28, are as follows: W. K. Vanderbilt, Jr., 90-hp. Daimler; W. C. Baker, Baker electric racer; Barney Oldfield, 60-hp. Winton; Joseph Tracey, 70-hp. Peerless; Capt. Hugh L. Willoughby, 10-hp. Autocar; B. M. Shanley, 40-hp. Decauville; H. L. Bowden, 60-hp. Daimler; S. B. Stevens, 60-hp. Daimler; F. A. La Roche, 40-hp. Darracq; W. C. Brokaw, 30-hp. Renault; Louis S Ross, 6-hp. Stanley; Walter Christie, 30-hp. Christie; J. Insley Blair, 24-35-hp. Panhard & Levassor; Oscar Hedstrom, 5-hp. Indian; William Wallace, 30-hp. DeDietrich; James L. Breese, 40-hp. Daimler; W. W Austin, 1¾-hp. Indian.

Ford's Mile in 39 2-5 on the Ice.

The mile under 40 seconds accomplished with the famous 999 by Henry Ford on the ice at New Baltimore, Mich., January 12, will doubtless stand for some time as the fastest straightaway performance for an automobile, although a number of well-known chauffeurs have signified their desire to wipe out the mark of 39 2-5 seconds set by Ford.

Every doubt of the authenticity of the performance has been removed, the trial having been sanctioned by the American Automobile Association and the distance carefully surveyed. The following officials were in charge of the event: C. W. Blackman, referee; Thomas Deckert, J. Colquohon, B. H. Everett, E. H. Broadwell and W. McMasters, timers.

The machine was fitted with a higher gear and thoroughly overhauled before the trial and a number of fast miles were tried before the attempt for record was made. The ice track was prepared by scraping the snow off, leaving the firm ice exposed on which a coating of sand and cinders was laid, all loose particles being carefully removed before the trial. The length of the sanded portion was a little under three miles and the width fifteen feet, a narrow course for the sensational speed developed.

After the finish of the mile Ford experienced considerable difficulty in slowing down his machine, the ice forming a treacherous surface for the car with brakes set hard.

The record will undoubtedly be placed in a special class, much as wind-shield trotting records are considered outside of marks established without such assistance.

PRIVATE IMPORTERS TO BE HELD UP BY THE A. L. A. M.

The attorneys of the Association of Licensed Automobile Manufacturers have been instructed to watch the principal ports of entry of the United States and proceed against importers and individual buyers and users of foreign cars who import machines on which royalty is not paid to the Licensed Association under Selden patent license. This move is made, it is asserted, to protect the nine New York importing concerns which have joined the Association and are paying royalties.

An interesting and portentous turn in Selden patent affairs occurred last week when the agency for Ford cars was transferred from C. A. Duerr & Co. to John Wanamaker's automobile department in New York. No information as to the significance of this move is obtainable from Manager Gash, of Wanamaker's, but the Ford agency was taken with a full knowledge that infringement suits brought by the Electric Vehicle Company were pending against the Ford Motor Company as manufacturers, Duerr & Co., as agents, and against the O. J. Gude Company as a user of the Ford car. And since Wanamaker took the agency, suits have been brought against him by the Electric Vehicle Company, acting by direction of the A. L. A. M. upon several grounds.

The allegation is made that the Ford Motor Company bought back from Duerr & Co. the New York agency for the Ford car with the object of placing it with Wanamaker and thereby fortifying itself in the impending litigation.

The arrival of C. L. Charley from Paris to display Mercedes cars at the show and later to establish an agency for the Daimler product in this country, has caused a stir in local importing circles, as the A. L. A. M. had previously licensed other importers to sell these cars and Charley claimed the exclusive right obtained from the Connstatt makers. As a result of the dispute and with the object of protecting its members, the Licensed Association has instituted proceedings against Charley as a contributory infringer of the Selden patent.

Factory Lecture on Auto Construction.

BUFFALO, Jan. 16.—A very interesting and instructive lecture on the new Thomas three-cylinder touring car was delivered by Fred Nehrbas at the factory of the E. R. Thomas Motor Company, Tuesday night. The lecture was accompanied by stereopticon views.

Over 100 automobilists were present, and all expressed themselves as greatly pleased with the lecture, which was so successful that the Thomas company has decided to repeat it at the various automobile centers during the season. Mr. Thomas announced that the lecture would be given before any automobile club desiring it.

Details of the bearings, steering gear, front and rear axles, transmission, motors, and the chain, were illustrated, particularly the chain pull, which it was shown is between bearings, whereby the strain is divided equally between both bearings to eliminate the usual twisting strain. The new sliding gear transmission, which showed the direct drive on the high speed without any gears in mesh, which is one of only three or four in the country, was clearly illustrated.

Mr. Nehrbas demonstrated the advantages of modern construction, showing that with vertical motor and sliding gear transmission with countershaft and side chain drive, it is easy to remove any part without disturbing the alignment of any other part of the mechanism.

The lecturer said that a very large percentage of the automobile troubles are traced to the difficulty, in many forms of construction, of removing and replacing the motor parts so that the parts will be in proper alignment. In many cases, he said, repairmen are unjustly and severely blamed for the length of time consumed, when in reality it is the fault of the construction.

AUTO EXPRESS SERVICE TO BE TRIED IN JOLIET, ILL.

JOLIET, Ill., Jan. 16.—The stock of the Joliet Automobile and Gargage Company just incorporated here, has been placed in small amounts among prominent people and merchants of Joliet and among all the automobile owners. A site has been selected near the center of Joliet for the erection of a three-story brick garage and salesroom, with quarters on the second floor for the Joliet Automobile Club, which will be organized in the immediate future.

It is the intention to install a complete electric charging plant and to place in operation a number of delivery wagons for a general package and parcel delivery service for all merchants and grocers of Joliet. This delivery business will be handled on the central station basis, *viz.*, using one or more wagons to collect packages from the merchants and deliver them at the central office of the service company, where they will be sorted and loaded into the wagons destined for different sections of the city. This is the same system that was used by the Boston Auto Express Company in Boston, where the merchants found that it effected a considerable saving over old methods of delivery and at the same time gave a much better service. It is estimated by the Joliet company that three or four automobiles will be able to give at least two deliveries for each merchant over all sections of the city where twelve wagons are now required. The company is making contracts with the merchants to equip itself and be in readiness to handle delivery business on May 1.

In addition to the above delivery business, the Joliet Automobile and Garage Company will do a general sales and repair business and is now making contracts for the sale of various machines for this season.

Chelsea Company in Receiver's Hands.

The Chelsea Mfg. Co., Ltd., of Chelsea, Mich., was placed in the hands of a temporary receiver on the 9th inst. This action was deemed best by the officials of the company, as they have been compelled to suspend active manufacturing during the past six months for the want of sufficient capital. The lack of the capital has not been occasioned by lack of business, but through the inability of one party to live up to his agreements with the company. In regard to construction, the company has continued to keep fully abreast with the times, and it will show a new four-cylinder car at Chicago as well as the two-cylinder car they have been making for the past year. This is with a view to reorganization at Chelsea or elsewhere, which seems probable.

Recent Incorporations.

Auto Car Equipment Company, Buffalo; capital, $50,000. Directors: J. B. Corcoran G. W. Atterbury, and E. B. Olmsted, Buffalo.

Fay & Bowen Engine Company, Geneva, N. Y.; capital, $40,000. Directors: W. L. Fay, E. S. Bowen, and Henry Brewer, Geneva.

Toledo Motor Car Co., H. E. King, H. W. Lloyd, C. F. Chapman, Jr., T. W. Caughling, G. D. Weller. Capital $20,000.

Homan & Schultz Company, New York City; to manufacture automobiles; capital $20,000. Incorporators and directors for the first year: Frank D. Homan, Jersey City, N. J.; Theo E. Schultz, Ed. Miehling, New York City.

Swinehart Clincher Tire and Rubber Company, of Akron, Ohio; to manufacture and market J. A. Swinehart's new improved clincher tire, for which an application for patent is now pending; capital stock, $100,000. Incorporators: James A. Swinehart, Howard F. Siegrist, F. E. Ream, Henry Feuchter, and B. C. Swinehart.

The George N. Pierce Company has notified the Mobile Carriage Company of San Francisco that its new four-cylinder touring car will be shipped to that city about May 1. It is said that the car will be one of the most powerful that has been seen there, developing 35-horsepower and attaining a speed, loaded, of sixty miles an hour. The Mobile Carriage Company has hitherto taken no part in automobile racing, but when the new car arrives it will enter competitions in San Francisco and the neighborhood.

Patents

Internal Combustion Engine.

No. 746,925.—Newton Crane of Boston, Mass.

Fig. 1.—An explosion engine in which the disposition of the parts is as shown in

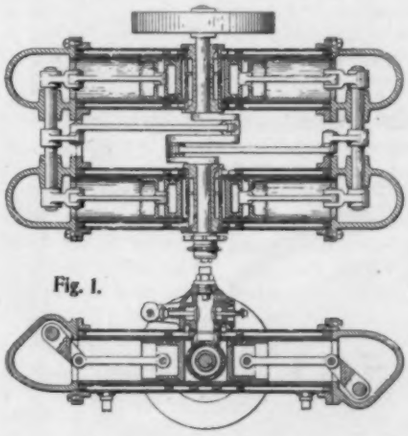

Fig. 1.

the illustration, namely, two pairs of cylinders arranged in parallelism with the pistons moving oppositely and the crankshaft located between the pistons; the connecting rods, rock-shafts, arms and pitmans transmitting the impulses to the crankshaft. The purpose is to provide an arrangement whereby the pistons move a greater distance with relation to an arc of movement of the crankshaft at the initial portion of its stroke, than with relation to a similar arc during the end of its stroke.

Catalytic Igniter.

No. 747,182.—Thomas B. Jeffery of Kenosha, Wis.

Fig. 2.—A device for the ignition of gaseous mixtures in explosion motors by the use of a catalytic substance, such as platinum gauze, black or sponge platinum, introduced into the explosion chamber by means of a removable cartridge or plug. The cylindrical shell *H* is closed at its inner end by fine-meshed platinum wire-gauze *K*,

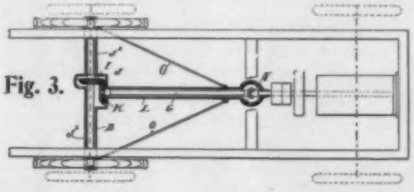

Fig. 3.

the gases from the explosion chamber *A* being forced by the geared pump *E* through the port *d* and thence through the platinum gauze. The catalytic property of the finely divided platinum tends to cause such a combination of the gases that the platinum is heated until it becomes incandescent, causing the gases to unite with an explosive flash which ignites the motor-power gases in the explosion chamber *A*. The shell *H* being set into the threaded plug *G*, the device may be removed from the engine for the purpose of heating the platinum by external means. To start the motor, gas may be forced through the platinum by compressing the bulb *M*, causing the gases to pass from *A*, through the ports *a* and *d*, the check-valve *J* preventing the escape of the gas under pressure from the shell *H*.

Flexible Shaft Drive.

No. 749,909.—Henry Ford of Detroit, Mich.

Fig. 3.—The object is to afford a construction possessing fewer parts than found in the usual propeller-shaft drive. A single unviersal joint *N* is used and the shaft *G* and axle *B* are carried in tubular casings *J2* and *L*, enlarged to accommodate the bevel gears *H* and *I*. Suitable distance rods, *O*, are provided, extending from the outer ends of the axle to the propeller shaft casing.

Engine Lubrication.

No. 747,767.—Louis Renault of Billancourt, France.

Fig. 4.—The object of this invention is to provide a lubricating system for explo-

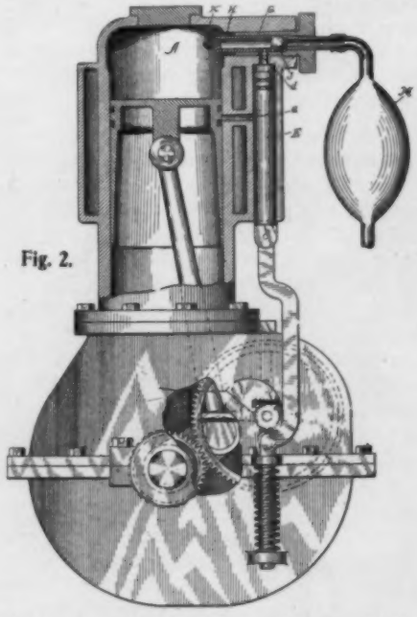

Fig. 2.

sion motors whereby the cranks may obtain sufficient oil without an excess of lubricant being employed.

A trough-shaped receptacle, *a*, is formed on the upper member of the crankcasing, with openings so disposed that a constant supply of oil is fed by gravity to the engine crankshaft. The reservoir is filled by the flow of oil thrown against the inner walls of the crankcasing by the travel of the crank and connecting rod, which dips into the oil supply in the bottom of the chamber.

Automatic Carbureter.

No. 747,264.—Thomas L. Sturtevant of Quincy, and Thomas J. Sturtevant of Newton Center, Mass.

Fig. 5.—The mixing chamber, obtains its supply of air by means of a vacuum-regulating check-valve 17, attached to the adjustable spring-actuated stem 16, air

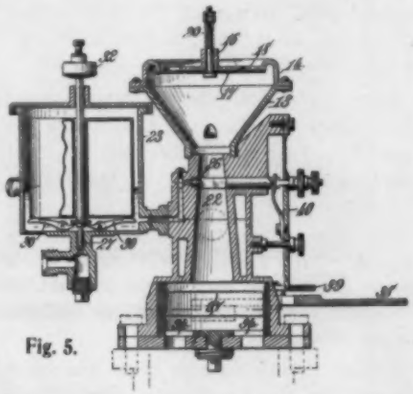

Fig. 5.

inlets, 18, being provided in the covering cap 14. The throttle valve, 34, rotatable by the lever 38, and with suitable openings for the passage of the gases, is provided with an eccentric rim to give movement to the spring regulating lever 40, which in turn actuates the needle valve 26, admitting gasoline to the conical mixing chamber. The down rush of air, caused by a partial vacuum induced in the chamber 13, carries the gasoline and air through the gauze screens 37, still further pulverizing the mixture. The automatic feature is accomplished by the resistance of the spring 20, controlling the air inlet opening 18, and the variable position of the needle-valve 26, commanding the gasoline supply. It is claimed that the merit of the invention lies largely in the conical shape of the mixing chamber, with its larger end towards the throttle, which permits of a light vacuum and a consequent small demand on the engine.

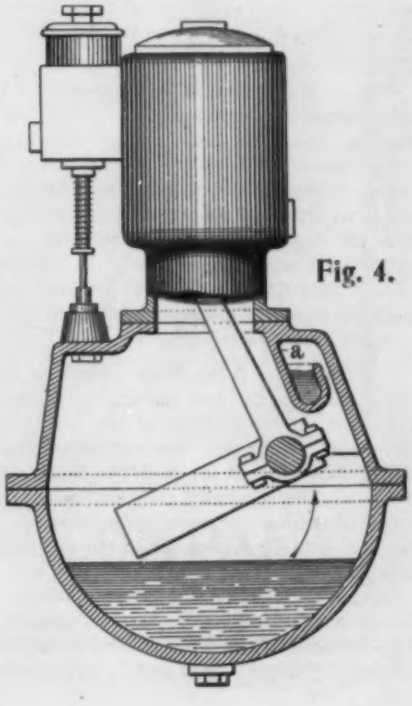

Fig. 4.

News Notes and Trade Items.

Winton 1904 cars, ordered by Julius Fleischmann, mayor of Cincinnati, and Dr. George B. Hawley, of Cincinnati, are to be delivered by February 1.

A. M. Smith, of Lewiston, W. Va., has taken the agency for the Oldsmobile for 1904 in his part of the State and has been made special agent for the Oldsmobile Company.

The Queen City Automobile Exchange Company of Buffalo, will handle the Orient Buckboard this season and act as sub-agent, through G. S. Buse of Buffalo, for the White and Northern.

Owing to the success that has been enjoyed by the Continental Caoutchouc Company in this country, it has been decided to make Continental tires in American sizes as well as in the metric sizes now produced.

A Bramwell car, one of the first of the output of the New Springfield Automobile Company of Springfield, Ohio, was constructed for Capt. Arthur N. French of Lebanon, Ohio. This machine was sent to the New York show.

The first 1904 car to be delivered in Cincinnati this year was a $3,500 Toledo, sold by the Cincinnati Automobile Company to George Morris, a wealthy foundryman who already owned a $2,000 Toledo. A similar auto has been purchased by Dr. H. C. Wendel.

The Automobile Club of Cincinnati is planning several "affairs" for the winter, the first of which is to be a reception at the home of Mr. Val Duttenhofer, Jr., at which Mayor Julius Fleischmann will make an address. A banquet, to be given in March at the Queen City Club, is also being arranged.

The Grey Wolf was fitted with Diamond tires during its record-breaking trials on the Florida beach, January 1 and 2, when tremendous strains were set up in the tires. Examination of the tracks left in the sand after the passage of the Packard flyer showed that frequently the car was entirely clear of the ground, the drive-wheels sometimes being out of contact with the sand for a distance of eight feet, by actual measurement.

The Brooklyn Automobile Company of Brooklyn, N. Y., has arranged for the exclusive eastern control of the Haynes-Apperson output and has contracted for the greater part of the Kokomo factory's output. The company may also take on some other line. A stockholders' meeting, held on January 8, resulted in the resignation of Sidney Hunt Smith, owing to sickness, and the election of officers as follows: President and treasurer, L. A. Hopkins; vice-president, John H. Vanderveer; other directors, J. Hunt Smith and L. R. Adams.

Horace Lowry, son of Thomas Lowry, the street railway magnate of Minneapolis, is the defendant in a $1,000 damage suit. The plaintiff is a woman who claims to have suffered injuries last summer as a result of Mr. Lowry's driving of his automobile on the Minnetonka Road.

The examination following the close of the automobile course in the Boston Y. M. C. A., that on steam vehicles, resulted in the awarding of certificates on January 12 as follows: Experienced men, Grade A, eleven men; B, seven; C, two. Inexperienced, Grade A, nineteen; B, twenty-three; C, sixteen. Rankings of other men who passed the examination are still to be announced.

Among the passengers on the White Star steamship *Romanic*, which sailed from Boston, Saturday, January 16, for the Mediterranean, were Paul H. Deming and Mrs. Deming, who went on a honeymoon trip to Italy. Mr. Deming is the New York manager of the White Sewing Machine Company, and has taken with him the automobile which he drove in the New York-Pittsburg endurance run; in it he and Mrs. Deming will tour Southern Europe. Mrs. Deming was Miss Helen Smith of Detroit.

The Cincinnati Automobile Company has decided to open a regular automobile livery business in the spring and for that purpose has placed with the Thomas B. Jeffery Company of Kenosha, Wis., an order for ten double-seated automobiles. All are to be delivered before the first of April. The Gunther Bros. Company, undertakers, will also do an automobile livery business in addition to their regular livery stable and undertaking business. They have six big stables in different parts of Cincinnati. Their first auto was delivered early this month.

J. A. Cramer, an automobile dealer of Buffalo, N. Y., has taken a long lease of the property at 737 to 743 Main Street, and extending through to Washington Street in the Bison City. He is now having erected on the property a large brick building to be used as an automobile showroom and garage. He expects to have one of the most complete automobile stations in the country and will also continue in the bicycle business. He will have entire control of Western New York for the sale of the Ford cars. A full line of accessories for automobilists will be kept in stock.

Ralph Temple has bought Mr. Austrian's stock in the Ralph Temple & Austrian Co., of Chicago, and has made application for change of name to the Ralph Temple Automobile Company, which will be granted in thirty days. Mr. Temple, who has been in the automobile business in Chicago since three years ago, when he opened, on Wabash Avenue, one of the first automobile retail and supply houses in that city, has decided to reduce the number of his agencies, but will handle several makes of gasoline cars at different prices, probably making the Franklin his leader, and also a line of electrics and perhaps also a line of steamers. Mr. Temple has leased the lower floors of a new building being erected on Michigan avenue opposite the Logan monument.

Los Angeles Trade Notes.

LOS ANGELES, Cal., Jan. 11.—The registering of automobiles under the new ordinance shows that there are about 550 automobiles in daily use here. There are very few delivery wagons as yet, but one concern now has eight Cadillacs with delivery bodies and is known as the Auto Delivery Company. The other delivery wagons are scattering and will amount to less than a score altogether.

The new White garage, at 712 Broadway, is the latest big establishment opened. The whole building is painted white and the upper floor has been engaged for club quarters by the Automobile Club of Southern California. The White garage is 170 feet deep and 60 feet wide, and was formerly a livery stable; it adjoins the new nine-story Tourist hotel, which is just reaching completion on the southeast corner of Seventh Street and Broadway. Adjoining the White garage on the south is the machine shop which makes a specialty of repairing steam cars, being better fitted for that purpose than any other repair shop in the city. Connected with this are Captain H. D. Ryus, in charge, assisted by Robert Atkinson; Sam Theis, demonstrator, and A. E. Whiterauer at the head of the machine shop.

Another big garage which has been lately opened is that of Woodill & Hulse Electric Company. They secured the big pavilion at 526 South Los Angeles Street, which until lately was the Nazareen church. This roomy building looks like a great skating rink, and one-half of its space is devoted to automobiles, the other half to electric manufacturing. Woodill & Hulse now have the agency for the St. Louis automobiles and the Automobile Touring Company stores its cars with them. The Automobile Touring Company is owned by J. R. Buss of Minneapolis, who has stations in this city and at Pasadena, and in the summer at both St. Paul and Minneapolis, Minn. Mr. Buss uses 1904 Autocars and 1903 Packards exclusively. He does his business from stands in front of the fashionable hotels.

A similar business is done by J. F. Sebree of Cleveland, Ohio, who has four Peerless cars which he uses for public hire work, and they stand in front of the Westminster Hotel, which is opposite Hotel Van Nuys. He stores his cars with Olive & West at Seventh Street and Broadway.